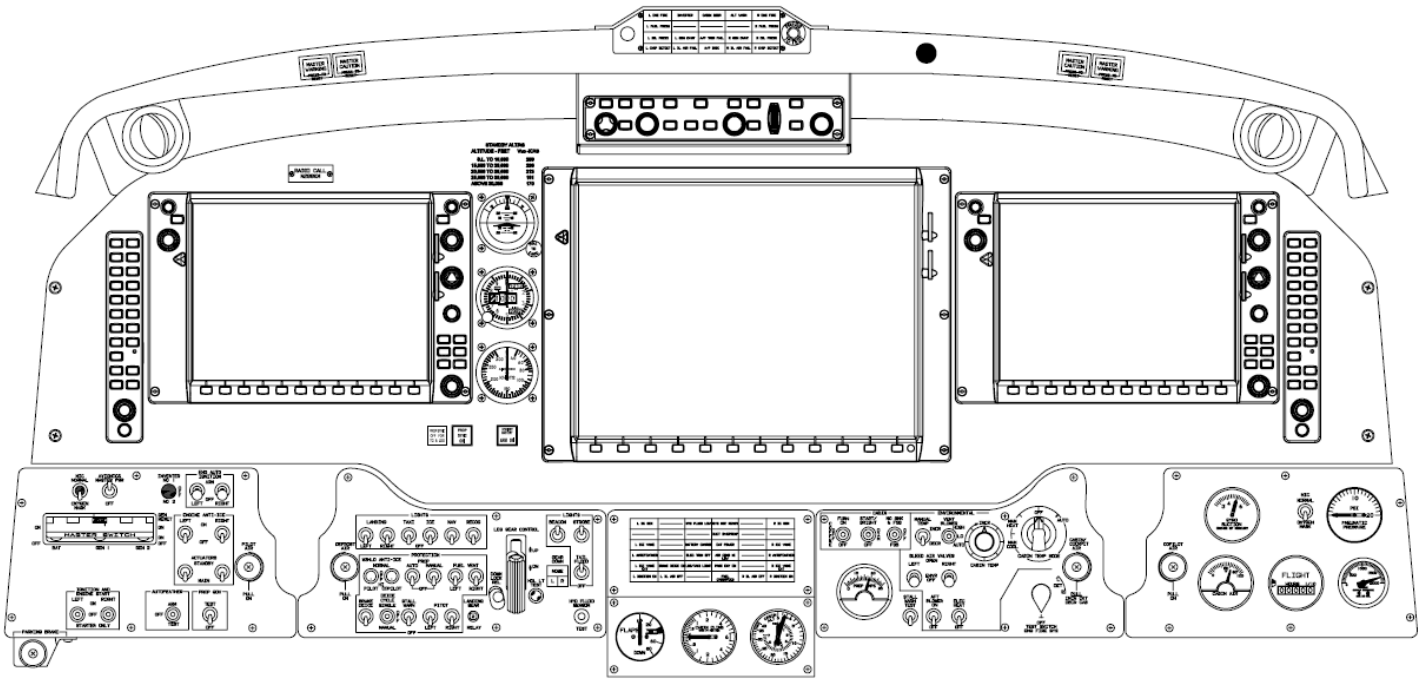
GARMIN

G1000 / GFC 700
System Maintenance Manual
Hawker Beechcraft
Model 200/B200 Series King Air

Contains Instructions
For Continued Airworthiness
For STC SA01535WI-D



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RECORD OF REVISIONS

Revision	Revision Date	Description	ECO #
2	4/6/09	Revise Table 1-1 to 0985.01	61175
3	7/17/09	Added GSM 86, TAWS-A, Radio Altimeter	62341
4	11/1/10	Added GDL59, GSR 56, GTS 8XX and ESP options	76618
5	5/11/12	Updated procedures for software version 0985.04	90414
6	7/19/12	Corrected GA drawing reference error in Section 3.8.2	93256

DOCUMENT PAGINATION

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CAUTION

The GDU lens is coated with a special anti-reflective coating that is very sensitive to skin oils, waxes and abrasive cleaners. CLEANERS CONTAINING AMMONIA WILL HARM THE ANTI-REFLECTIVE COATING. It is very important to clean the lens using a clean, lint-free cloth and an eyeglass lens cleaner that is specified as safe for anti-reflective coatings.

IMPORTANT

All G1000 screen shots used in this document are current at the time of publication. Screen shots are intended to provide visual reference only. All information depicted in screen shots, including software file names, versions and part numbers, is subject to change and may not be up to date.

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1 INTRODUCTION

1.1 Content, Scope, Purpose

This document provides Instructions for Continued Airworthiness (ICA) for the Garmin G1000 Integrated Flight Deck including the GFC700 Automatic Flight Control System (AFCS) as installed in the Hawker Beechcraft Model 200/B200 series King Air, under STC SA01535WI-D. This document satisfies the requirements for continued airworthiness as defined by 14 CFR Part 23.1529 and Appendix G. Information in this document is required to maintain the continued airworthiness of the G1000 and GFC700.

1.1.1 Applicability

This document applies to all Model 200/B200 series King Air aircraft equipped with the G1000 and GFC700 AFCS systems.

Modification of an aircraft by this Supplemental Type Certificate (STC) obligates the aircraft operator to include the maintenance information provided by this document in the operator's Aircraft Maintenance Manual and the operator's Aircraft Scheduled Maintenance Program.

Aircraft modified by this STC have been shown to qualify for operation in Reduced Vertical Separation Minimum (RVSM) airspace as a group aircraft in accordance with Title 14 of the Code of Federal Regulations (14 CFR) Part 91, Appendix G, "Operations in Reduced Vertical Separation Minimum (RVSM) Airspace", and Federal Aviation Administration (FAA) Document No. 91-RVSM, Change 2 dated 2/10/2004, "Guidance Material On The Approval Of Operators/Aircraft For RVSM Operations". This qualification is based on analysis of the configuration and performance of the air data, automatic altitude control, altitude alerting, and altitude reporting systems. These systems must be maintained in accordance with the inspections and tests specified in this document and other current maintenance practices to guarantee continued compliance to RVSM specifications.

1.1.2 Identifying an STC Configuration

Table 1-1 lists the G1000 System Software Version numbers approved for this STC.

Table 1-1, G1000 System Software Version

Aircraft Model	G1000 System Software Version	Notes
200/B200 Series King Air	~~0985.01~~ superseded	Updated GIA software
200/B200 Series King Air	0985.02	Updated GDU and GIA software
200/B200 Series King Air	0985.03	Updated GDU and GIA software
200/B200 Series King Air	0985.04	Updated GDU and GIA software

This STC allows multiple configurations for the King Air 200/B200 series. The correct configuration for a particular aircraft is loaded by choosing the applicable airframe/engine/propeller configuration. Refer to Table 6 of the General Arrangement Drawing, Garmin Part Number 005-00421-03, for configuration information for eligible engine and propeller combinations.

IMPORTANT!

If the technician is unsure of an aircraft's STC configuration, perform the following:

After acknowledgement of the splash screen, use the FMS knob on the GCU 477 controller to go to the AUX – SYSTEM STATUS page on the MFD. In the AIRFRAME section (upper right corner,) the display shows the current G1000 airframe configuration and system software version number. The airframe configuration is shown in the AIRFRAME field and the system software version number is shown in the following format: 'SYS SOFTWARE VERSION XXXX.XX'. It correlates to the software image used to load the software to the system:

EXAMPLE:

System Software Version **'0985.01'** = Software Image P/N **006-B0985-01**

Restart the MFD in configuration mode (see section 3.7) and use the FMS knob on the GCU 477 controller to go to the GDU-AIRFRAME CONFIGURATION page. In the AIRFRAME section (upper right corner), verify the correct configuration for SERIES, ENGINE and PROP.

EXAMPLE:

For a configuration that loaded "**King Air B200 PT6A-42**" with a "**McCauley 3-BLADE**" propeller, the AIRFRAME section should display:

SERIES: B200
ENGINE: PT6A-42
PROP: MCCAULEY 3

1.2 Organization

The following outline briefly describes the organization of this manual:

Section 2: System Description
Provides a complete description of the type design change associated with installing the G1000 integrated cockpit system in the 200/B200 Series King Air. An overview of the G1000 and GFC 700 system interface is also provided.

Section 3: G1000 Control & Operation
Presents basic control and operation information specifically tailored to maintenance practices. Basic G1000 Configuration Mode operation is also described.

Section 4: Instructions for Continued Airworthiness
Provides maintenance instructions for continued airworthiness of the G1000 and GFC 700 systems.

Section 5: Troubleshooting
Provides troubleshooting information to aid in diagnosing and resolving potential problems with the G1000 and GFC 700 systems.

Section 6: G1000 Equipment Removal & Replacement
Gives instructions for the removal and replacement of G1000 and GFC700 equipment.

Section 7: G1000 Equipment Configuration & Testing
Gives instructions for loading software, configuring, and testing of G1000 equipment.

Section 8: System Return to Service Procedure
Specifies return-to-service procedures to be performed upon completion of maintenance of the G1000 system.

1.3 Definitions/Abbreviations

ADF: Automatic Direction Finder
ADTS: Air Data Test Set
AFCS: Automatic Flight Control System
AFM: Airplane Flight Manual
AFMS: Airplane Flight Manual Supplement
AHRS: Attitude Heading Reference System
CDU: Control Display Unit
CFR: Code of Federal Regulations
DME: Distance Measuring Equipment
EAU: Engine/Airframe Unit
ESP Electronic Stability and Protection
GPS: Global Positioning System
GPWS: Ground Proximity Warning System
HSDB: High-Speed Data Bus (Ethernet)
IAU: Integrated Avionics Unit
ICS: Inter-Com System
ITT: Interstage Turbine Temperature
LRU: Line Replaceable Unit
MFD: Multi-Function Display
OAT: Outside Air Temperature
PFD: Primary Flight Display
RVSM: Reduced Vertical Separation Minimum
STBY: Standby
STBY ATT: Standby Attitude Indicator
STBY ALT: Standby Altimeter
STBY A/S: Standby Airspeed Indicator
STC: Supplemental Type Certificate
TAWS: Terrain Awareness & Warning System
WAAS: Wide Area Augmentation System
VHF: Very High Frequency

1.3.1 Units of Measure

Unless otherwise stated, all units of measure are English units.

1.4 Publications

The following documents are required by this maintenance manual to perform maintenance. It is the responsibility of the owner / operator to ensure latest versions of these documents are used during operation, servicing or maintenance of the airplane.

Table 1-2, Required Documents

Part Number	Garmin Document
005-00421-00	Master Drawing List, Garmin G1000/GFC 700 in Hawker Beechcraft Model 200/B200 Series King Air
005-W0025-00	Wiring Diagram, G1000/GFC 700 King 200/B200
005-00421-03	General Arrangement, G1000/GFC700 AFCS, in Hawker Beechcraft 200/B200 Series King Air
005-00421-32	GWX 68 Radar Install, King Air 200/B200
005-00421-33	Antenna Install, King Air 200/B200
005-00421-30	Main Instrument Panel Installation, King Air 200/B200
005-00421-34	Electrical Equipment Install, Nose Bay, King Air 200/B200
005-00421-35	Roll Servo Install, w/GSM 85A King Air 200/B200
005-00421-36	Yaw Servo Install, w/GSM 85A King Air 200/B200
005-00421-37	Pitch Servo Install, w/GSM 85A King Air 200/B200
005-00421-38	Pitch Trim Servo Install, w/GSM 85A King Air 200/B200
005-00421-39	Magnetometer Install, King Air 200/B200
005-00421-40	OAT Sensor Install, King Air 200/B200
005-00421-42	Datalink Install, King Air 200/B200
005-00421-45	Roll Servo Install, w/GSM 86 King Air 200/B200
005-00421-46	Yaw Servo Install, w/GSM 86 King Air 200/B200
005-00421-47	Pitch Servo Install, w/GSM 86 King Air 200/B200
005-00421-48	Pitch Trim Servo Install, w/GSM 86 King Air 200/B200
005-00421-51	Wire Harness Installation, Nose, King Air 200/B200
005-00421-52	Wire Harness Installation, Cabin, King Air 200/B200
005-00421-53	Wire Harness Installation, Tail, King Air 200/B200
005-00421-54	Control Wheel Modification,G1000/GFC 700, King Air 200/B200
005-00421-55	Overhead Control Panel Modification, G1000/GFC 700, King Air 200/B200
005-00421-31	Pedestal Re-Configuration, King Air 200/B200
005-00421-56	Circuit Breaker Panel Modification, King Air 200/B200
005-00421-58	Glareshield Lighting Modification, King Air 200/B200
	Hawker Beechcraft Document
101-590010-39	Beech Super King Air 200 and 200T Wiring Diagram Manual
101-590010-133	Super King Air Wiring Diagram Manual
101-590010-161	Super King Air Wiring Diagram Manual
101-590010-19	Super King Air 200 Series Maintenance Manual
101-590010-453	Super King Air 200 Series Airworthiness Limitations Manual
101-590097-13	King Air Series Component Maintenance Manual
98-39006	Structural Inspection and Repair Manual
	Other Documents
85-292-1-1033	Signal Conditioner Installation Manual (Meggitt/Vibro-Meter)
9016182	Mid-Continent Instruments - Installation Manual and Operating Instructions, 4200 Series Attitude Indicator
TP-336	L-3 Avionics Systems – Emergency Power Supply Installation Manual, PS-835

The following publications are recommended to be on hand during the performance of maintenance activities.

Table 1-3, Reference Publications

Part Number	Garmin Document
190-00915-02	Airplane Flight Manual Supplement, G1000 Integrated Avionics System and GFC 700 AFCS in Hawker Beechcraft 200/B200 King Air
190-00929-01	G1000 King Air 200/B200 Cockpit Reference Guide
190-00355-04	GDL 69/69A XM Satellite Radio Activation Instructions
190-00907-00	G1000 System Maintenance Manual
190-00303-72	GSA8X/GSM85(A) Installation Manual
190-00303-83	GSM 86 Installation Manual
190-00313-63	GMU 44 Installation Location Magnetic Interference Survey Procedure

Generic installation manuals for individual Garmin LRUs are also available through the 'Dealer Resource Center' section of the Garmin web site; refer to Section 1.5 for details.

1.5 Revison and Distribution

This document is required for maintaining the continued airworthiness of the aircraft. When this document is revised, every page will be revised to indicate current revision level.

Garmin Dealers may obtain the latest revision of this document on the Garmin Dealer Resource Center website.

Owner/operators may obtain the latest revision of this document from the https://fly.garmin.com/ Support page, or by contacting a Garmin dealer, contacting Garmin Product Support at 913-397-8200, toll free 866-739-5687, or using around the world contact information on https://fly.garmin.com/.

A Garmin Service Bulletin describing the revision to this document will be sent to Garmin dealers if the revision is determined to be significant.

2 SYSTEM DESCRIPTION

2.1 Equipment Descriptions

2.1.1 GDU 1040A PFD (2) & GDU 1500 MFD

Two Garmin GDU 1040A displays and one GDU 1500 display are installed in the King Air instrument panel. The GDU 1040A units, 10.4 inch LCD displays with 1024x768 resolution, are configured as PFD 1 and PFD 2; the GDU 1500 unit, a 15 inch LCD display with 1024x768 resolution, is configured as a MFD. All displays provide control and display of nearly all functions of the G1000 integrated cockpit system. The PFD displays are located on either side of the MFD, with the stand-by instruments located between the Pilot's PFD (PFD 1) and the MFD. GMA 1347D Audio Panels are located outboard of each PFD. Additionally, a GMC 710 AFCS Controller is located in the upper instrument panel, above the MFD, and a GCU 477 is installed in the pedestal. The GCU 477 provides the control interface for the MFD.

The GDU 1500 communicates with the GDU 1040A units, GDL 69A datalink, GWX68 weather radar, optional GDL59 wi-fi datalink and optional GTS 8XX traffic through a high-speed data bus (HSDB) Ethernet connection. The GDU 1500 communicates with the GCU 477 via RS-232 digital interface.

The GDU 1040A units communicate with each other and the GIA 63W units through a high-speed data bus (HSDB) Ethernet connection.

PFD 1 receives primary electrical power from the new Essential Bus and secondary electrical power from Dual Fed Bus No. 1. PFD 2 receives electrical power from Dual Fed Bus No. 2. Electrical power to the MFD is also provided by the Essential Bus. The displays will power-up immediately with external or aircraft power or battery operation.

All displays are installed in the King Air panel using ¼-turn fasteners. Three CDU cooling fans are also installed behind the panel for PFD and MFD cooling.

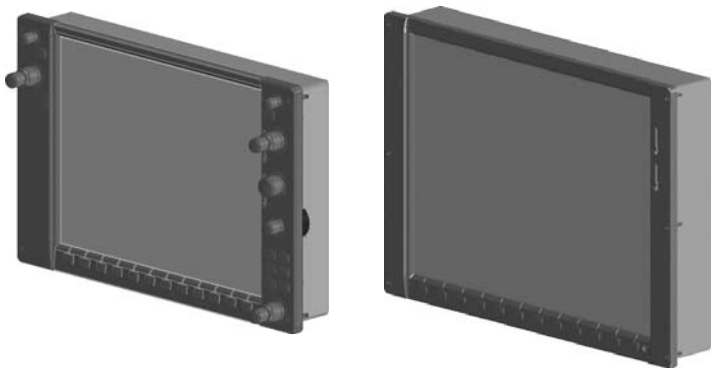


Figure 2-1, Display Units

2.1.2 GMA 1347D Audio Panel (2)

The Garmin GMA 1347D Audio Panel integrates NAV/COM digital audio, intercom system and marker beacon controls. The 200/B200 installation includes two GMA 1347D panels. The GMA 1347D panels provide control of all cockpit intercom/mic systems as well as NAV/COM/ILS audio. The units also provide display reversion mode control through a large red button. Warning and alert audio received by the GMA 1347Ds is processed by and received from the GIA 63W Integrated Avionics Units (IAUs). Electrical power to GMA 1 is provided from the Essential bus. Electrical power to GMA 2 is provided from Avionics Bus No. 1. GMA 1 will be powered immediately with external or aircraft power or battery operation. GMA 2 will operate after selecting Avionics Master on. The GMA 1347D units interface with the existing marker beacon antenna, as well as existing mic and phone jacks and oxygen mask mic.

Figure 2-2, Audio Panel

2.1.3 GMC 710 AFCS Control Unit

The dedicated AFCS controls on the GMC 710 allow crew control interface with the various GFC 700 autopilot / flight director functions. GMC 710 controls are discussed in detail in the G1000/King Air 200/B200 Series Cockpit Reference Guide. The GMC 710 is powered by Dual Fed Bus No. 1.

Figure 2-3, AFCS Controller

2.1.4 GCU 477 FMS Control Unit

The GCU 477 functions as the primary control interface to the GDU 1500 MFD. The GCU 477 provides alphanumeric, softkey, and flight planning function keys used to interface with the G1000; the MFD does not possess any knobs or controls other than softkeys. The GCU 477 is powered by the Essential Bus. The GCU 477 also provides the crew with the added functionality of tuning their receivers via the GCU as well as the PFD. Detailed instructions regarding the controls are discussed in the G1000 Cockpit Reference Guide.

Figure 2-4, FMS Controller

2.1.5 GTX 33( ) Extended Squitter Transponder (2)

The Garmin GTX 33( ) transponders communicates with the on-side GIA 63W through RS-232 digital interface. This STC installation allows for installation of two GTX 33 non-diversity transponders, two GTX 33D Diversity transponders, or one of each type. The units are mounted under the floor in the cabin just aft of fuselage station 246.750. Power is provided by the No. 1 GTX 33( ) from the Essential Bus. The No. 2 GTX 33( ) is powered from the Avionics Bus No. 1. Each GTX 33( ) transponder interfaces with a transponder antenna mounted to the bottom of the fuselage. Each GTX33D diversity transponder interfaces to a transponder antenna mounted to the top of the fuselage.

Figure 2-5, Transponder

2.1.6 GIA 63W Integrated Avionics Unit (2)

Two Garmin GIA 63W Integrated Avionics Units (IAUs) contain the VHF COM/NAV receivers, WAAS GPS receiver, Flight Director, and system integration microprocessors. The GIAs also serve as a communication interface to all other G1000 LRUs in the system. Each GIA 63W communicates directly with the on-side GDU 1040A display using a HSDB Ethernet connection. Both GIAs are located remotely in the nose equipment bay.

GIA 1 receives primary electrical power from the Essential Bus and a secondary electrical power supply from Dual Fed Bus No.1. GIA 2 receives electrical power from Dual Fed Bus No. 2. The GIA 1's COMM power supply (COMM 1) is provided by the Essential Bus. GIA 2's COMM power supply (COMM 2) is provided by Avionics Bus No. 1. Therefore, both GIAs power-up immediately with external or aircraft power or battery operation, with the exception of COMM 2 operation which will become active after selection of Avionics Master on.

Both GIA 63Ws interface to the following equipment:

- Existing VOR/LOC/Glideslope Antenna System
- Existing VHF COM #1 & #2 Antennas
- Newly installed GA 36 and GA 37 GPS/WAAS Antennas
- GMA 1347D, #1 & #2
- GEA 71, #1 & #2
- GDU 1040A, #1 & #2
- GSA 80
- GRS 77, #1 & #2
- Traffic System (if installed)

The GIA 63W #1 interfaces to the following additional equipment:

- GDC 74B #1
- GTX 33( ) #1
- DME 42 (if installed)

The GIA 63W #2 interfaces to the following additional equipment:

- GDC 74B #2
- GTX 33 ( ) #2
- ADF (if installed)
- Stormscope (if installed)
- Radio Altimeter (if installed)

Figure 2-6, GIA unit

2.1.7 GEA 71 Engine/Airframe Unit (2)

The Garmin GEA 71 Engine/Airframe Units provide engine/airframe data to the G1000 system. Data received from transducers/sensors is processed and sent to GIA 63Ws (via RS-485 digital interface), and subsequently to the GDU 1500 MFD. Engine parameters are normally displayed on the MFD. In the event of MFD failure, the engine parameters can be displayed on PFD 1 and/or PFD 2 using display reversion. The GEAs are located behind the instrument panel and is mounted in a vertical orientation. Electrical power to GEA 1 is provided from Dual Fed Bus No. 1 and to GEA 2 from Dual Fed Bus No. 2. Both GEA units will power-up immediately with external or aircraft power or battery operation.

NOTE

On serial numbers BB-1484, 1486 and subsequent, the electrical system includes the L ENG INSTR and R ENG INSTR buses which (after this STC) are powered from Dual Fed Bus No. 1 and No. 2 respectively. On these aircraft, GEA 1 receives power from Dual Fed Bus No. 1 via the L ENG INSTR bus and GEA 2 receives power from Dual Fed Bus No. 2 via the R ENG INSTR bus.

Each GEA interfaces to the following sensors for its onside engine:

- Oil Pressure Sensor
- Oil Temperature Sensor
- Fuel Flow Sensor (via onside Signal Conditioner)
- Turbine Speed Sensor (via onside Signal Conditioner)
- Propeller Speed Sensor(via onside Signal Conditioner)
- Torque Sensor
- Interstage Turbine Temperature (ITT) Sensor

Figure 2-7, GEA unit

2.1.8 GDC 74B Digital Air Data Computer (2)

The Garmin GDC 74B computers compile information from the pitot/static system and various outside air temperature (OAT) and awareness sensors and provide digital air data computations to the G1000 system. The GDC 74B communicates with the GIA 63W, GDU 1040A, and GRS 77 using ARINC 429 digital interface. The unit is mounted behind the instrument panel. GDC 1 receives primary electrical power from the Essential Bus and a secondary power supply from Dual Fed Bus No. 1. GDC 2 receives power from Dual Fed Bus No. 2. GDC 1 and GDC 2 connect to existing pitot/static ports. Refer to Figure 2-20 for a schematic of the aircraft's pitot/static system and its connections to the G1000 STC installed equipment.

IMPORTANT!

Aircraft modified by this STC are eligible to be approved for RVSM operation. RVSM critical maintenance instructions contained in this document must be followed in order to guarantee performance within RVSM specifications.

Figure 2-8, Air Data Computer

2.1.9 OAT Probe (2)

The Garmin GTP 59 OAT Probes provide the GDC 74B with air temperature data. The OAT probes are mounted to the bottom of the fuselage at F.S. 113.5.

Figure 2-9, OAT probe

2.1.10 GRS 77 Attitude & Heading Reference System (2)

The Garmin GRS 77 AHRS units provide attitude and heading information to the G1000 system. The units, mounted in the nose equipment bay, contain advanced tilt sensors, accelerometers, and rate sensors. The unit interfaces with the GDC 74B and GMU44 Magnetometer and utilizes GPS signals from the GIA 63Ws. Actual attitude and heading information is sent using ARINC 429 digital interface to both GDU 1040As and GIA 63Ws. The GRS 77 interfaces with and provides power to the GMU 44 Magnetometer. The GRS 77 supplies attitude and heading information directly to the PFDs, MFD, and GIAs.

GRS 1 receives primary electrical power from the Essential Bus and a secondary power supply from the Dual Fed No. 1 Bus. GRS 2 receives electrical power from Dual Fed No. 2 bus.

Figure 2-10, AHRS

2.1.11 GMU 44 Magnetometer (2)

The GMU 44 provides horizontal and vertical magnetic field information to the GRS 77 AHRS. This allows heading to be calculated and provides assistance during AHRS alignment. The GMU 44 units are mounted in the tailcone. The units receive power directly from the GRS 77 units and communicate with the GRS 77 units via RS-485 digital interface.

Figure 2-11, Magnetometer

2.1.12 GDL 69A Datalink

The GDL 69A provides the interface to the GWX 68 weather radar and optional GDL59 wi-fi datalink by acting as a communications hub between the MFD and GWX 68 and GDL 59 via HSDB. The GDL 69A also provides XM Radio weather and music entertainment through means of a dedicated satellite data link. The GDL 69A is mounted behind the instrument panel. Power to the GDL 69A is received from the Avionics No. 2 bus. The GDL 69A sends weather data through the HSDB bus to the MFD, where the data link interface is controlled. Digital audio is sent directly to the GMA 1347D Audio Panel.

Optional remote control (GRC 10) and remote control transceiver (GRT 10) may be interfaced with the GDL 69A. Installation of the GRC 10 and GRT 10 is in accordance with Garmin STC SA01487SE or other approved data. Refer to the approved Instructions for Continued Airworthiness information for these units. It is recommended that GRT 10 be powered from the Entertainment Bus.

Figure 2-12, GDL 69A Datalink

2.1.13 GDL 59 Wi-Fi Datalink (optional)

The GDL 59 provides a POTS (plain old telephone service) phone interface and a high speed data link between the aircraft systems and ground computers while the aircraft is on the ground using the IEEE 802.11g ("Wi-Fi") protocol. The GDL 59 also provides the interface to an optional GSR 56 satellite datalink, which adds airborne low speed data link and voice communication capability. The GDL 59 unit interfaces to the Garmin Integrated Flight Deck via the GDL69A using HSDB. The GDL 59 is located in the aft cabin floor area, just forward of the cabin door. The GDL 59 is powered from the Avionics No. 2 bus.

Figure 2-13, GDL 59 Wi-Fi Datalink

2.1.14 GSR 56 Satellite Receiver (optional)

The GSR 56 provides airborne low speed data link and voice communication capability to Garmin Integrated Flight Deck installations. The GSR 56 contains a transceiver that operates on the Iridium Satellite network. The GSR 56 interfaces directly to the GDL 59 via an RS-232 interface. The GSR 56 is located in the aft cabin floor area, just forward of the cabin door. The GSR 56 is powered from the Avionics No. 2 bus.

Figure 2-14, GSR 56 Satellite Receiver

2.1.15 GTS 8XX Traffic System (optional)

The GTS 8XX is a traffic surveillance system that uses active interrogation of Mode S and Mode C transponders to provide traffic advisories to the pilot. The GTS 820 is a TAS unit; the GTS 850 is a TCAS I unit. The installation includes a top directional antenna (GA 58) paired with a GPA 65 power amplifier / low noise amplifier (PA/LNA) unit and a bottom, unamplified GA 58 antenna. The GTS 8XX is located in the nose avionics bay on the top, left shelf. The GPA 65 is located in the left sidewall area, just in front of the most forward cabin window. The GTS 8XX traffic system is powered from the Avionics No. 2 bus.

Figure 2-15, GTS 8XX Traffic System

2.1.16 GWX 68 Weather Radar

The GWX 68 Airborne Weather Radar provides weather radar data output to the GDU 1500 MFD. The GWX 68 is mounted forward of the forward bulkhead at F.S. 30. Power to the GWX 68 is received from the avionics No. 1 bus. Data received from the GWX 68 is routed through the GDL 69A data link unit to the MFD via high-speed data bus (Ethernet).

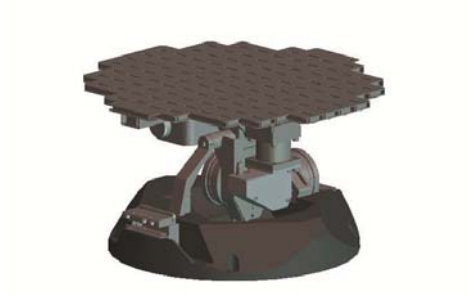


Figure 2-16, Weather Radar

2.1.17 GSA 80 Servos and GSM 85A/86 Servo Gearboxes (4)

The Garmin GFC 700 AFCS uses GSA 80 high torque servos to automatically control aircraft pitch, roll, yaw damper/turn coordination and pitch trim. The pitch trim variant of the GSA 80 is a high speed servo actuator. The GSA 80 contains a motor-control and monitor circuit board, as well as a solenoid and a brushless DC motor. The GSA 80 servo receives serial RS-485 data packets from the GIA 63Ws. The roll servo is located in the forward cabin lower fuselage at F.S. 185. The pitch, yaw, and pitch trim servos are located in the tail. Power to the servos is received from the avionics No. 2 bus. All servos mount to a Garmin GSM 85A or GSM 86 Servo Gearbox. The GSM 85A/86 is responsible for transferring the output torque of the GSA 80 servo actuators to the mechanical flight control surface linkage. The GSM 85A has a slip clutch that can be adjusted to a desired torque value. The GSM 86 has a clutch cartridge that cannot be adjusted to a different torque value.

Figure 2-17, Servo

2.1.18 Garmin G36 and 37 GPS/WAAS Antennas

This installation uses one G36 GPS/WAAS antenna and a G37 GPS/WAAS/XM antenna. The antennas are located in the upper, forward cabin, at F.S. 152.

2.1.19 Signal Conditioner (2)

Each GEA 71 receives signals from its on-side engine turbine speed sensor, propeller speed sensor and fuel flow sensors via a Meggitt (Vibro-Meter) Signal Conditioner. This unit converts the signals from the engine sensors to a signal usable by the GEA 71. These units are installed behind the instrument panel. Electrical power to the No. 1 Engine Signal Conditioner is provided from Dual Fed Bus No. 1 and to the No. 2 Engine Signal Conditioner from Dual Fed Bus No. 2. Both signal conditioners will power-up immediately with external or aircraft power or battery operation.

NOTE

On serial numbers BB-1484, 1486 and subsequent, the electrical system includes the L ENG INSTR and R ENG INSTR buses which (after this STC) are powered from Dual Fed Bus No. 1 and No. 2 respectively. On these aircraft, the No. 1 Engine Signal Conditioner receives power from Dual Fed Bus No. 1 via the L ENG INSTR bus and the No. 2 Engine Signal Conditioner receives power from Dual Fed Bus No. 2 via the R ENG INSTR bus.

2.1.20 Standby Airspeed Indicator

A Standby Airspeed indicator, Aerosonic part number 25030-0184, is installed between PFD 1 and the MFD. Due to varying airspeed marking requirements, four marking options are used. To determine the appropriate option for a specific aircraft configuration, refer to the General Arrangement drawing, Garmin Document 005-00421-03. The standby airspeed indicator does not require electrical power for normal operation except for internal instrument lighting, which is powered from Dual Fed No. 1 Bus and the emergency standby battery. This unit is connected to the right-hand pitot/static system.

2.1.21 Standby Altimeter

A standby altimeter, Aerosonic part number 16650-1172, or Thommen part number 3A43.22.35F.28.1.FU, is installed between PFD 1 and the MFD. This unit incorporates a vibrator to ensure accurate display altitude information. The vibrator is powered by the new Standby Instrument Bus and the emergency standby battery. Internal lighting of this unit is powered from Dual Fed No. 1 Bus and the emergency standby battery. This unit is connected to the right-hand static system.

2.1.22 Standby Attitude Indicator

The Mid-Continent Model 4200-11 Electric Attitude Indicator is used as the standby attitude indicator. It is connected to the new Standby Instrument Bus and the emergency standby battery. Gyro power and internal lighting of this unit is powered from Dual Fed No. 1 Bus and the emergency standby battery.

2.1.23 L-3 PS-835(C or D Model) Emergency Standby Battery

In the event of loss of all normal electrical power, the battery is designed to provide 24 Vdc (nominal) emergency power source for the following items:

- standby attitude indicator (operation and internal lighting)
- standby altimeter (vibrator and internal lighting)
- standby airspeed indicator (lighting only)
- pilot side glareshield lighting

The aircraft power buss provides a trickle charge to the PS-835 under normal conditions. This battery is installed in the nose avionics bay. It is controlled using the standby battery switch indicator on the instrument panel.

2.1.24 Safe Flight Lift Computer

For the optional Electronic Stability and Protection (ESP) feature with Angle Of Attack modes, a new Safe Flight lift computer, part number C-05606-1, that is a direct replacement for the existing lift computer is installed to provide an additional Low Airspeed Awareness (LAA) output to support the Angle of Attack modes of Electronic Stability and Protection. The lift computer is located in the same location as the original lift computer, under the forward cabin floor. Note: this unit is not used for the "ESP – no AOA" option.

2.2 G1000 Optional Interfaces

Optional equipment interfaces include L-3 WX-500 Stormscope, traffic systems, radio altimeter, ADF systems and DME systems. The G1000 also provides a general purpose ARINC bus for use with third party entertainment and cabin equipment. Refer to wiring diagram listed in Table 1-2, for specific interface information.

2.3 Electrical Power Distribution

This airplane uses a multi-bus system, as detailed below and in Figure 2-18. This Figure shows the system post installation of this STC. Although this STC made several bussing changes to the distribution system, the core electrical generation and distribution system remains unchanged from the basic airplane design. Figure 2-19 shows the power sources for all equipment used by this STC. Each bus used or modified by this installation is described below.

Left and Right Generator Buses: The left and right generator buses receive power from their respective left and right generators. The left and right generator buses also support all four dual fed buses and No. 1 and No. 2 avionics buses, respectively.

Isolation Bus: The Isolation bus is fed by two generator buses and the battery bus. The Isolation bus is used in this installation to provide power to the new Standby Instrument Bus and the new Essential bus.

Dual-fed Buses: The electrical distribution uses four individual dual-fed buses referred through this document as Dual Fed No. 1 Bus, Dual Fed No. 2 Bus, Dual Fed No. 3 Bus and Dual Fed No. 4 Bus. Each of these dual fed buses are powered from the Left and the Right Generator buses.

Avionics Buses: The No. 1 Avionics bus is powered from the Left Generator Bus via the Avionics No. 1 relay. The No. 2 Avionics bus is powered from the Right Generator Bus via the Avionics No. 2 relay. Both Avionics relays are controlled using the Avionics Master Switch.

Left and Right Engine Instrument Buses: On serial numbers BB-1484, 1486 and subsequent, the electrical system includes the L ENG INSTR and R ENG INSTR buses. This STC relocates these two buses such that they are powered from Dual Fed Bus No. 1 and No. 2 respectively. Prior to these serial numbers, these two buses are not installed and engine instruments are powered directly from the dual fed buses. (Figure 2-1 shows the system with these buses installed and relocated.).

Essential Bus: The Essential bus is a new bus added by this STC. It is powered from Dual Fed No. 1 bus and the Isolation bus.

Standby Instrument Bus: The Standby Instrument bus is a new bus added by this STC. It is powered by the Isolation bus and provides one source of power to the standby attitude indicator and standby altimeter vibrator.

Entertainment Bus: The Entertainment Bus is a new bus added by this STC. It is powered from the No.2 Avionics bus via a newly installed Entertainment Bus relay. This relay is controlled via the existing Cabin Furnishing switch so that bus can be easily shed by pilot using single switch action along with the other cabin equipment.

Emergency Standby Battery: The Standby Emergency Battery (STBY BATT) system in the King Air 200/B200 is designed to provide uninterrupted DC power to the Standby Attitude indicator (gyro motor), the Standby Altimeter (vibrator) and internal instrument lighting for the standby attitude indicator, standby altimeter and the standby airspeed indicator from the L-3 PS-835(C or D Model) Emergency Standby Battery. This standby battery power is independent from the normal electrical system and provides redundant power for the standby instruments in the event that all other electrical power is lost.

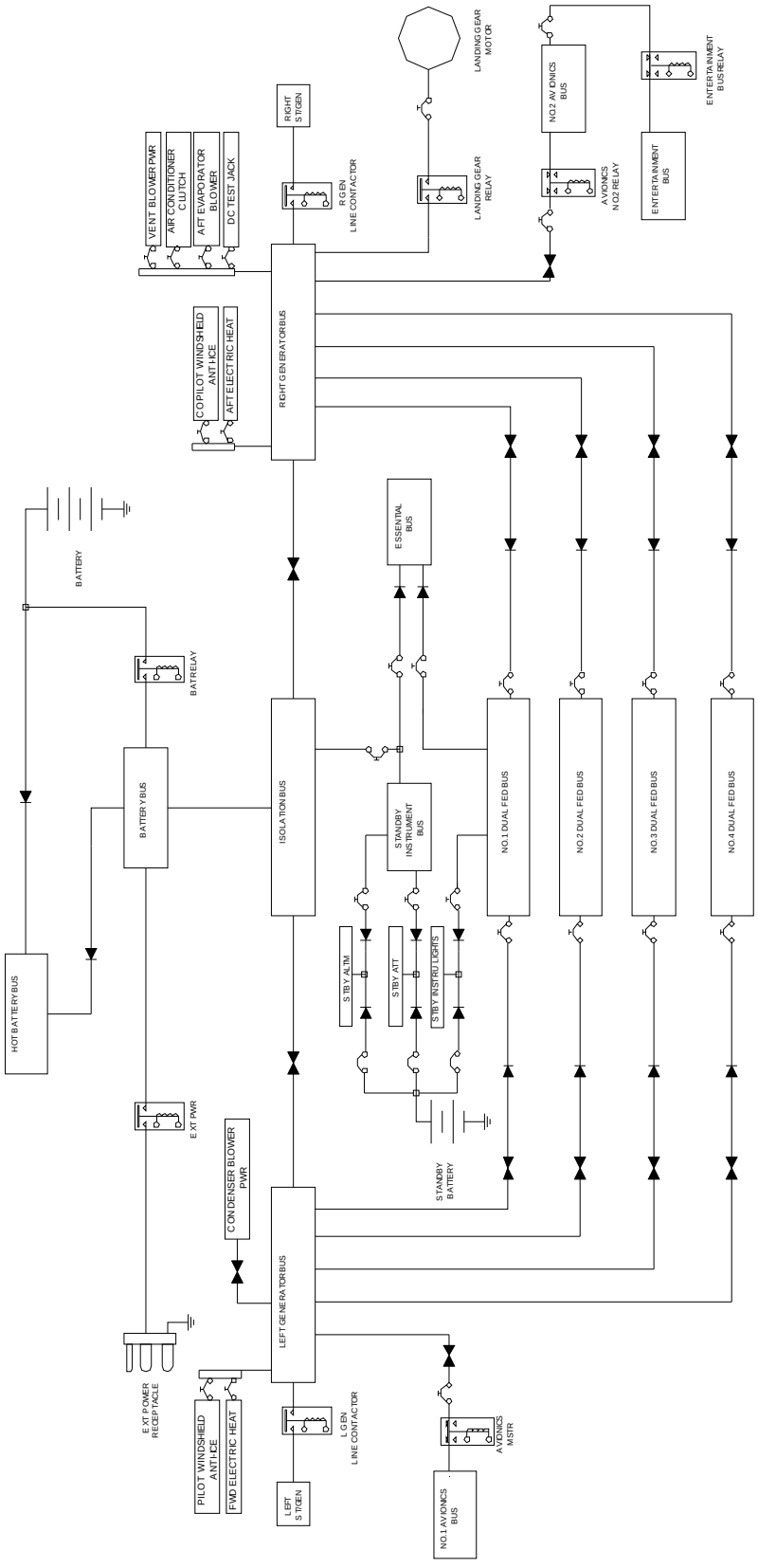


Figure 2-18, 200/B200 Electrical Distribution (Post G1000 STC)

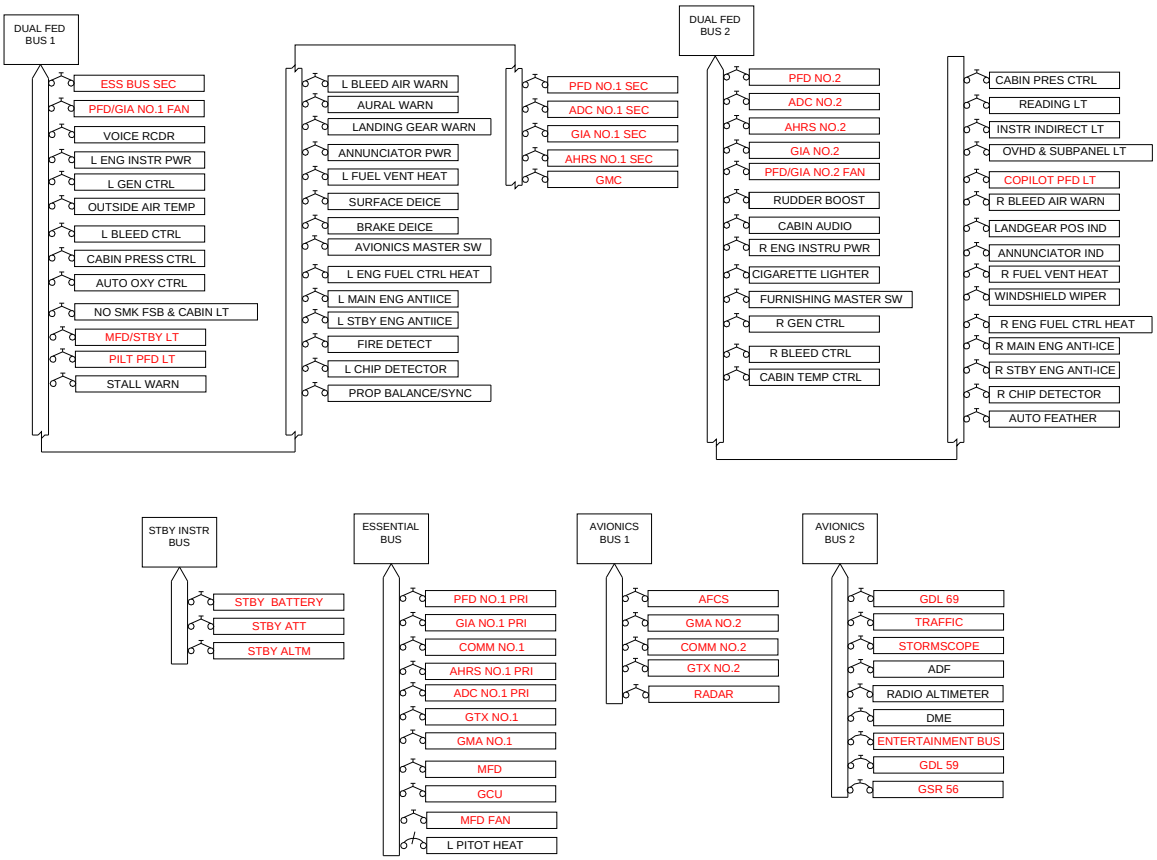


Figure 2-19, G1000 Component Power Sources

2.4 Pitot/Static System

The following schematic shows the pitot-static system as modified by this installation:

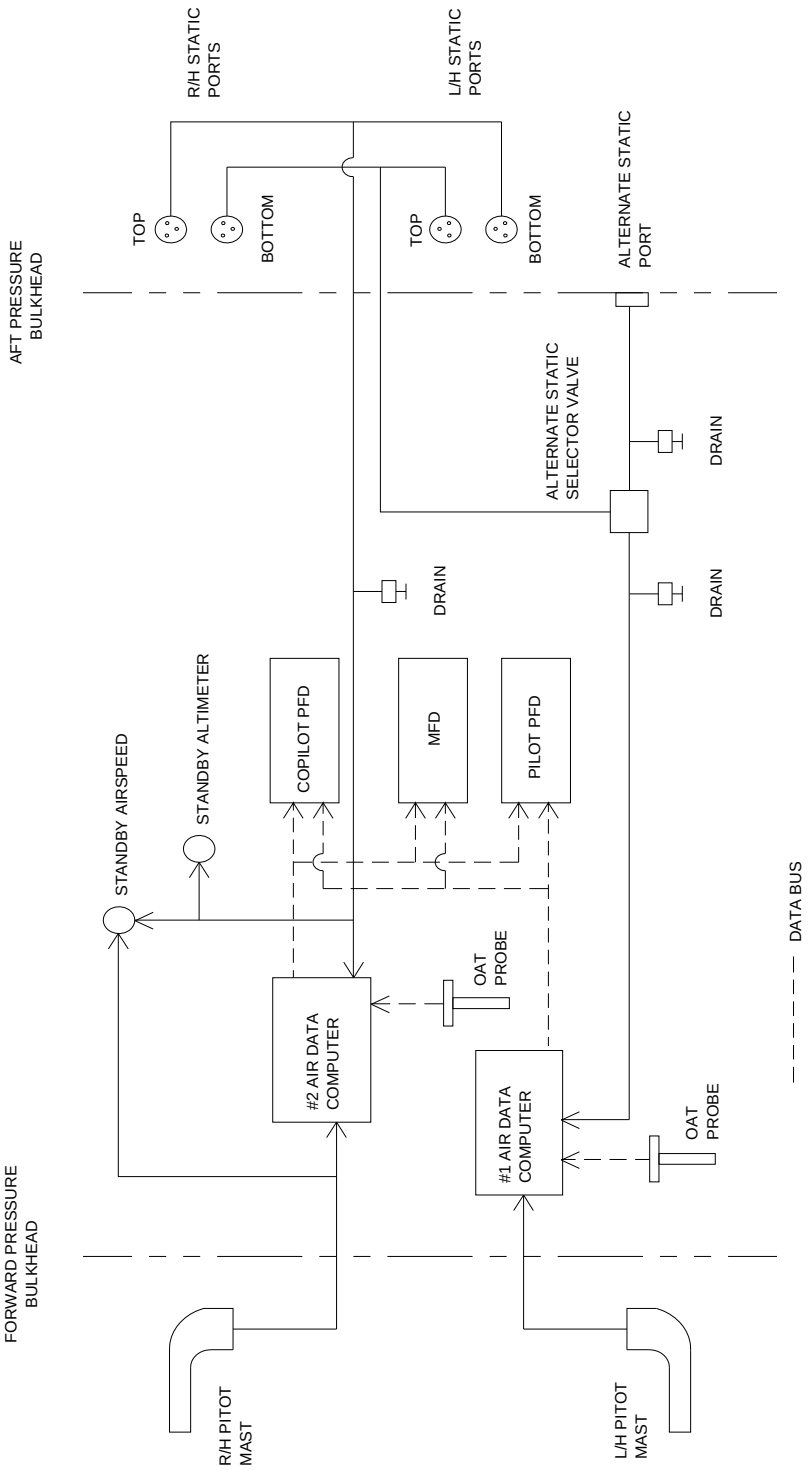


Figure 2-20, Pitot/Static System (Post G1000 STC)

2.5 Shield Block Grounds

The connectors on Garmin G1000 LRUs utilize the Shield Block grounding system to provide necessary ground reference to wire shielding and/or transducers. The shield block termination method allows multiple grounds to be terminated directly to a block mounted to the connector backshell assembly. Shielding and grounding requirements for all other LRUs and connectors are shown in the respective install drawings.

2.6 G1000 /GFC700 Block Diagram

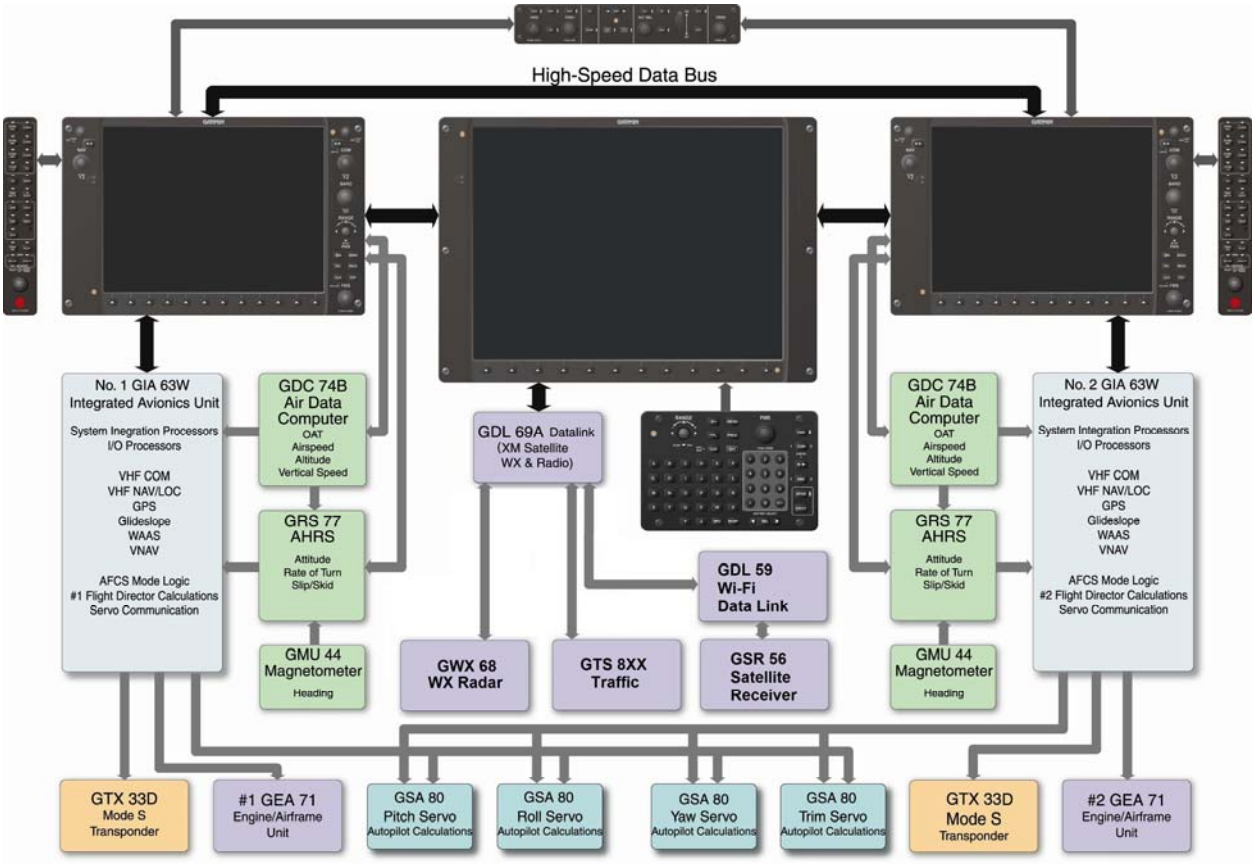


Figure 2-21, G1000/GFC 700 Block Diagram

3 G1000 Control & Operation

All control and operation of G1000 equipment as normally used in flight occurs through the PFDs, MFD, GMC 710, GCU 477 and GMA 1347D audio panel. Figure 3-1 through Figure 3-6 identify various interface buttons for these units.

3.1 GDU 1040A and GDU 1500 Displays

Figure 3-1 and Figure 3-2 provide identification of the GDU 1040A PFD and GDU 1500 MFD controls.

Figure 3-1, GDU 1040A Control Interface

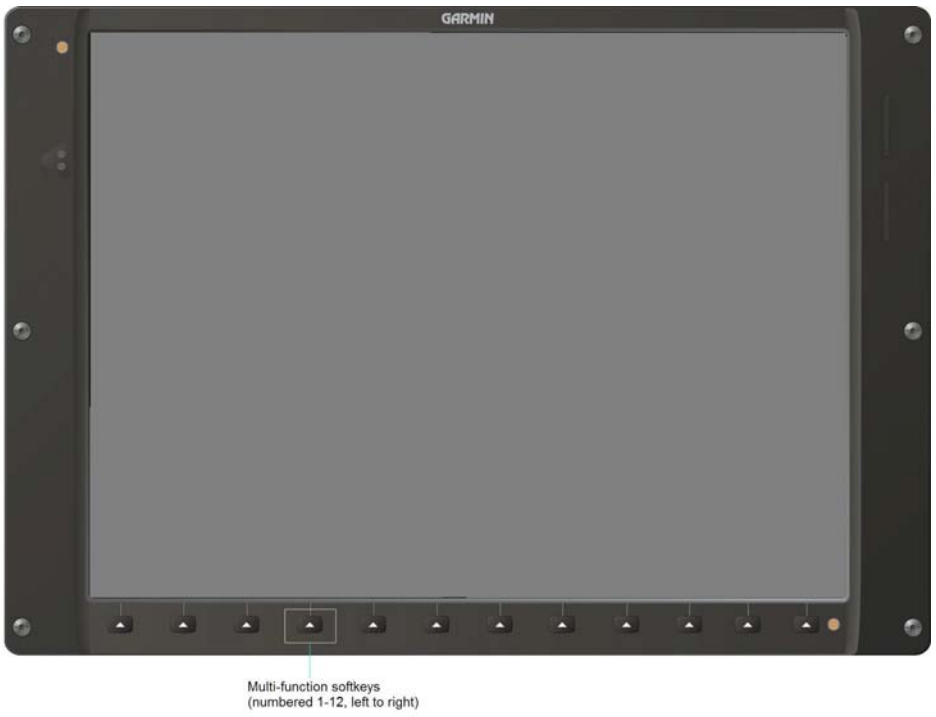


Figure 3-2, GDU 1500 Control Interface

3.1.1 Softkeys

Some pages have commands or selections that are activated by the GDU 1040 softkeys. If a softkey is associated with a command, that command will be displayed directly above the key. A grayed-out softkey shows a command that is unavailable. A softkey that is highlighted shows the current active selection.

Figure 3-3, G1000 Softkeys

3.1.2 FMS Knob

The FMS knob is the primary control for the G1000 system. Operation is similar to the Garmin 400/500 Series units.

To cycle through different configuration screens:

To change page groups: Rotate the large FMS knob.

To change pages in a group: Rotate the small FMS knob.

To activate the cursor for a page, press the small FMS knob directly in, as one would push a regular button.

To cycle the cursor through different data fields, rotate the large FMS knob.

To change the contents of a highlighted data field, rotate the small FMS knob. This action either brings up an options menu for the particular field, or in some cases allows the operator to enter data for the field.

To confirm a selection, press the ENT key.

To cancel a selection, press the small FMS knob in again, deactivating the cursor. The CLR key may also be used to cancel a selection or deactivate the cursor.

3.2 GCU 477 - MFD Controller

The MFD controls are located on the GCU 477 as show in Figure 3-4.

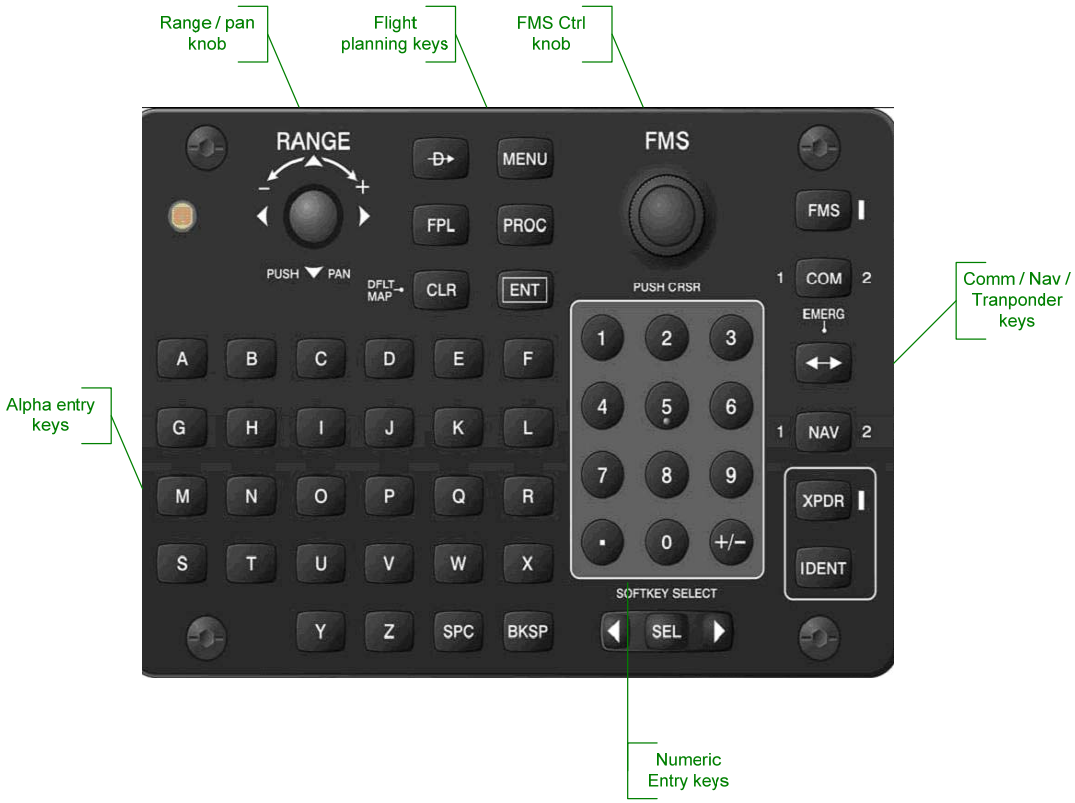


Figure 3-4, MFD Controls (GCU 477 shown)

3.3 GMC 710 - AFCS Controls

The dedicated AFCS controls located on the GMC 710 are discussed in detail in the G1000 CRG. The following figure is provided for reference:

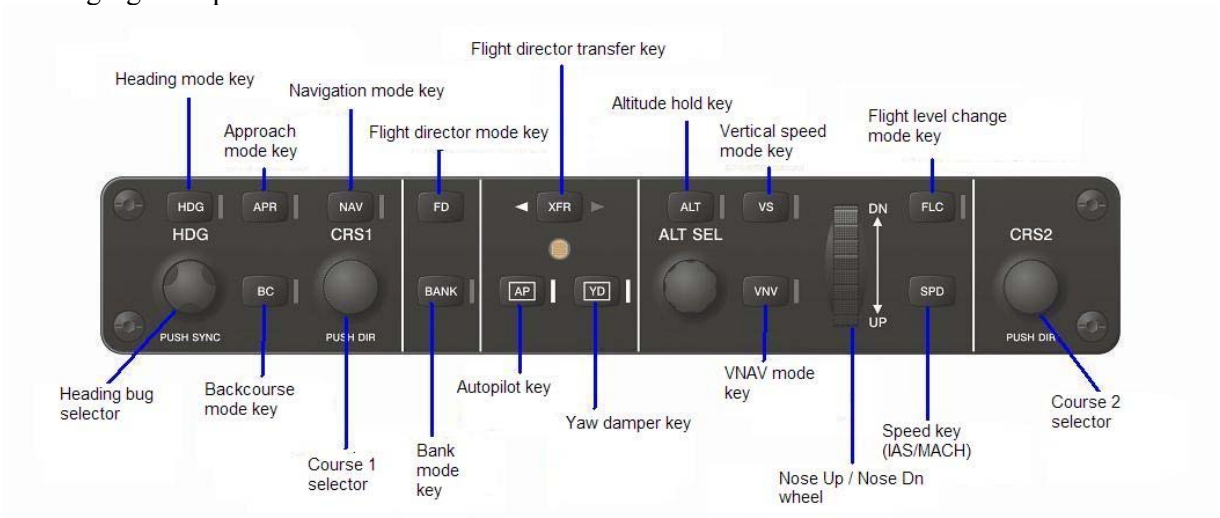


Figure 3-5, AFCS Controls (GMC 710 shown)

3.4 GMA 1347D Audio Panel

Figure 3-6 provides the audio panel controls.

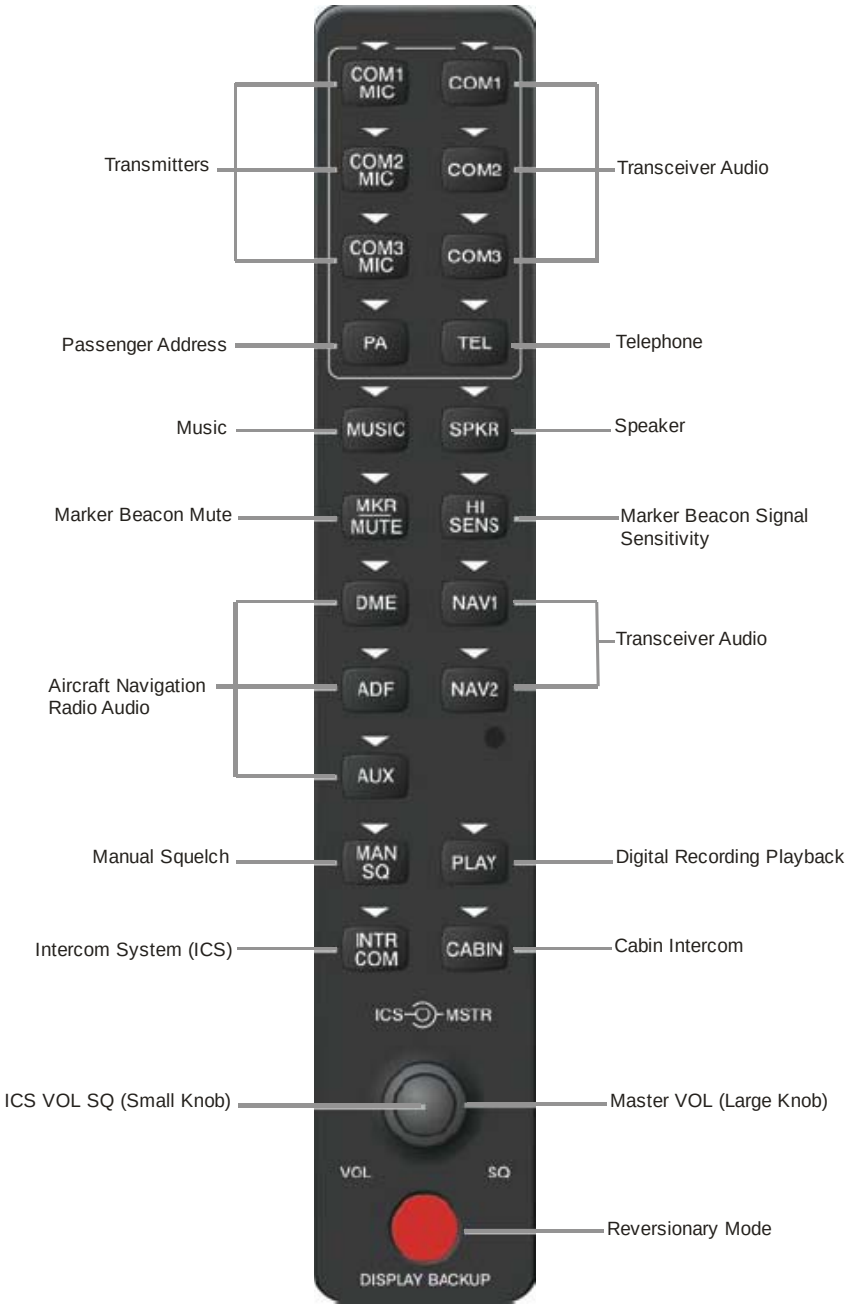


Figure 3-6, GMA 1347D Controls

3.5 G1000 Normal Mode

To start the G1000 system in Normal Mode:

1. With a ground power unit connected to the external power receptacle, set the BAT switch to 'ON'. The following G1000 equipment is powered:
   - PFD displays & MFD display
   - GRS 77 AHRS Units
   - GDC 74B Air Data Computers
   - GIA 63W Integrated Avionics Units
   - GEA 71 Engine/Airframe Units
   - GCU 477 FMS Control Unit
   - GMC 710 Autopilot Control Unit
2. Set the AVIONICS MASTER switch to 'ON'. The following G1000 equipment is powered:
   - GTX 33 Mode S Transponders
   - GMA 1347D Digital Audio Panels
   - GDL 69A Datalink Unit
   - GSA Servos
   - GWX 68 Weather Radar Unit

The G1000 system is now powered in the normal mode. In the normal operating mode, data fields that are invalid have large red X's through them. A valid field does not display a red X. Allow the displays to initialize for approximately one minute. The GDC 74Bs requires a longer initialization period than do the other LRUs. During normal operation, this causes the airspeed, altitude, vertical speed, and OAT fields to be invalid during the first ~40-60 seconds of PFD power-up. The PFDs and MFD will function as specified in the G1000 200/B200 Series Cockpit Reference Guide when the system has been correctly installed and configured.

Figure 3-7, Normal Mode

3.6 Reversionary Mode

Reversionary mode allows for display of information related to safe flight in the event of a display communication or hardware failure. For software version 0985.04 and later, the pilot's PFD automatically goes into reversionary mode when communication to the MFD is lost. Manual reversionary mode allows the operator to force the pilot or copilot's PFD into reversionary mode by pressing the large red button labeled 'DISPLAY BACKUP' on the respective GMA 1347D audio panel.

NOTE

When the 'DISPLAY BACKUP' button is pushed to exit reversionary mode, there is a 5-second debounce (or the GDU waits for 5 consecutive seconds) and then returns to normal mode if no other input is received. If the 'DISPLAY BACKUP' button is pushed again during this 5-second interval, the timer will repeat the count.

Figure 3-8, Automatic Reversion with MFD failure

Figure 3-9, Manual Reversion with pilot PFD failure

3.7 Configuration Mode Overview

Throughout this document, references are made to the PFD1, PFD2 and/or MFD being in configuration mode. The configuration mode exists to provide the avionics technician with a means of configuring, checking, and calibrating various G1000 sub-systems. Troubleshooting and diagnostics information can also be viewed in this mode.

To start the G1000 system in configuration mode, follow these steps:

1. Apply power to the G1000 system by applying aircraft EXT power, selecting the AVIONICS MASTER PWR and BATT switches to ON.
2. Pull the MFD, PFD1 (PRI), PFD1 (SEC) and PFD2 circuit breakers.
3. Press and hold the ENT key on PFD2 (co-pilot) while applying power using the PFD2 circuit breaker.
4. Release the ENT key after 'INITIALIZING SYSTEM' appears in the upper left corner of PFD2.
5. Press and hold the far right softkey on the MFD while applying power using the MFD circuit breaker. (Note that the ENT key on the GCU 477 MFD controller may be used after initial software loads.)
6. Release the softkey after 'INITIALIZING SYSTEM' appears in the upper left corner of the MFD.
7. Press and hold the ENT key on PFD1 (pilot) while applying power using the PFD1 (PRI) and PFD1 (SEC) circuit breakers.
8. Release the ENT key after 'INITIALIZING SYSTEM' appears in the upper left corner of PFD1.

CAUTION:

The Configuration Mode contains certain pages and settings that are critical to aircraft operation and safety. These pages are protected and cannot be modified, unless the technician is properly authorized and equipped. However, most protected pages are viewable to allow system awareness for troubleshooting.

NOTE

If the specific procedure requires an SD card to be in the top slot of the PFD/MFD, this card must be inserted prior to applying power to the PFD/MFD. Any time a card is inserted, the power to the PFD/MFD must be cycled.

NOTE

For a complete description and breakdown of each Configuration Mode page, refer to the G1000 System Maintenance Manual listed in Table 1-3.

3.7.1 SET>ACTV Configuration

Throughout the configuration mode pages, there are SET and ACTIVE columns for input/output settings and other parameters.

SET: Refers to a setting or group of settings that reside in PFD Internal Memory and/or the Master Configuration Module.

ACTIVE: Refers to an 'active' setting or parameter currently being used by the LRU. LRUs store the 'active' settings within internal memory.

Data can be manually copied from one column to the other (and consequently from PFD memory to the LRU memory and vice-versa) by using the following two softkeys, when available:

- SET>ACTV (read 'Set to Active') softkey: Allows the installer to send the information in the SET column (data stored in the master config module) to the ACTV column (data used by LRU).
- ACTV>SET (read 'Active to Set') softkey: Causes the LRUs current settings to be copied to the master configuration module as SET items.

CAUTION:

The ACTV>SET softkey must be used with caution! If an improperly configured unit is installed, this softkey causes the wrong configuration to replace the correct aircraft configuration.

In the first example shown in Figure 3-10, the SET columns do not match the ACTIVE columns. The inequality between SET and ACTIVE indicates a configuration mismatch. By pressing the SET>ACTV softkey, this copies the SET column to the LRU unit's configuration memory. The settings then become the ACTIVE settings for the LRU being configured.

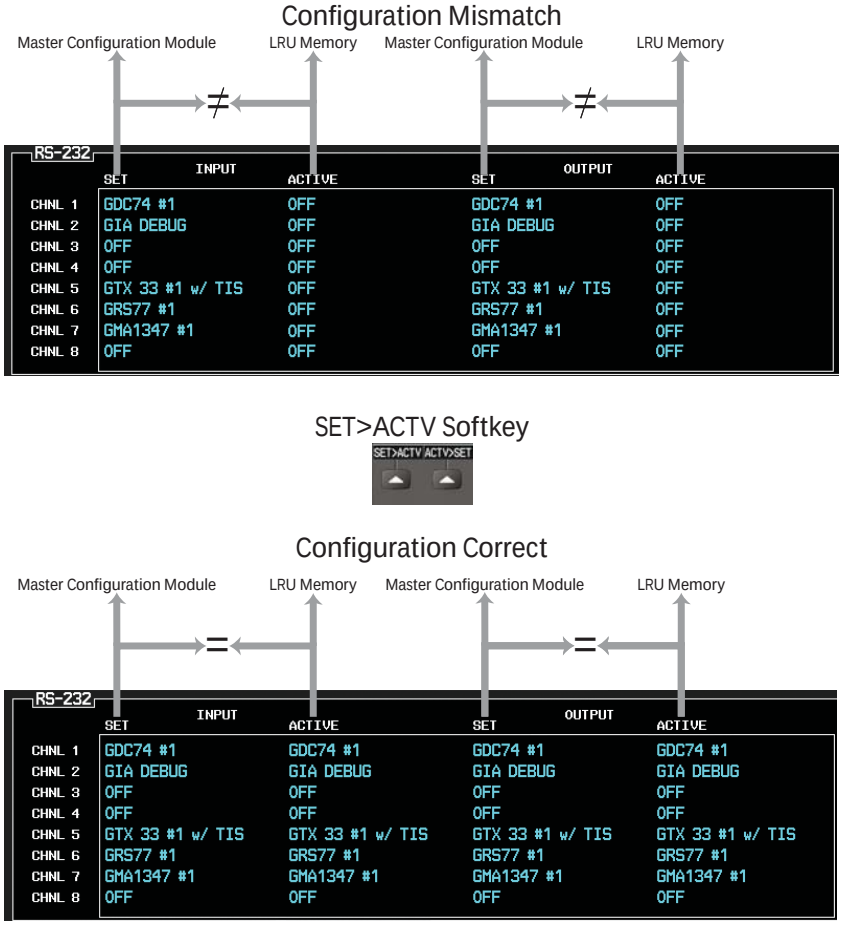

Configuration Mismatch
Master Configuration Module
LRU Memory
Master Configuration Module
LRU Memory
RS-232
INPUT
OUTPUT
SET
ACTIVE
SET
ACTIVE
CHNL 1 GDC74 #1 OFF GDC74 #1 OFF
CHNL 2 GIA DEBUG OFF GIA DEBUG OFF
CHNL 3 OFF OFF OFF OFF
CHNL 4 OFF OFF OFF OFF
CHNL 5 GTX 33 #1 w/ TIS OFF GTX 33 #1 w/ TIS OFF
CHNL 6 GRS77 #1 OFF GRS77 #1 OFF
CHNL 7 GMA1347 #1 OFF GMA1347 #1 OFF
CHNL 8 OFF OFF OFF OFF
SET>ACTV Softkey
SET>ACTV ACTV>SET
Configuration Correct
Master Configuration Module
LRU Memory
Master Configuration Module
LRU Memory
RS-232
INPUT
OUTPUT
SET
ACTIVE
SET
ACTIVE
CHNL 1 GDC74 #1 GDC74 #1 GDC74 #1 GDC74 #1
CHNL 2 GIA DEBUG GIA DEBUG GIA DEBUG GIA DEBUG
CHNL 3 OFF OFF OFF OFF
CHNL 4 OFF OFF OFF OFF
CHNL 5 GTX 33 #1 w/ TIS GTX 33 #1 w/ TIS GTX 33 #1 w/ TIS GTX 33 #1 w/ TIS
CHNL 6 GRS77 #1 GRS77 #1 GRS77 #1 GRS77 #1
CHNL 7 GMA1347 #1 GMA1347 #1 GMA1347 #1 GMA1347 #1
CHNL 8 OFF OFF OFF OFF

Figure 3-10, SET>ACTV Diagram

When troubleshooting the system, technicians can look for inequalities between SET and ACTIVE columns. Certain problems can be resolved simply by pressing the SET>ACTV softkey, which reloads settings to the specific LRU from the PFD. (Note that this can also be accomplished by reloading the configuration files for the LRU. Section 7 describes this process for each LRU).

A blank active column, as shown in Figure 3-11, represents loss of communication between the display and the particular unit. See Section 5 for more details on troubleshooting.

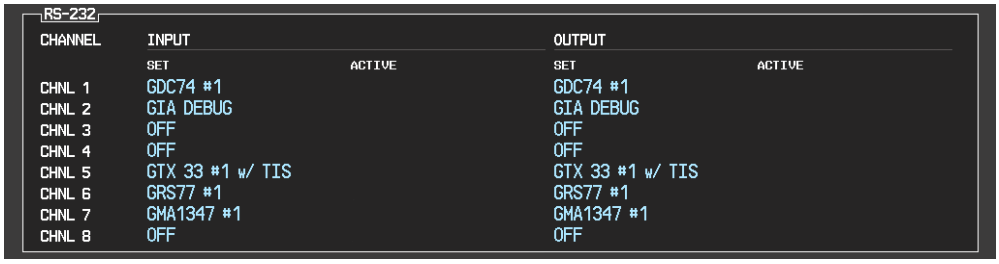


Figure 3-11, Loss of Communication

3.7.2 Configuration Prompts

When configuration settings are changed, the technician receives on-screen prompts and/or confirmations such as those shown in Figure 3-12. Section 7 shows other prompts encountered during the configuration process.

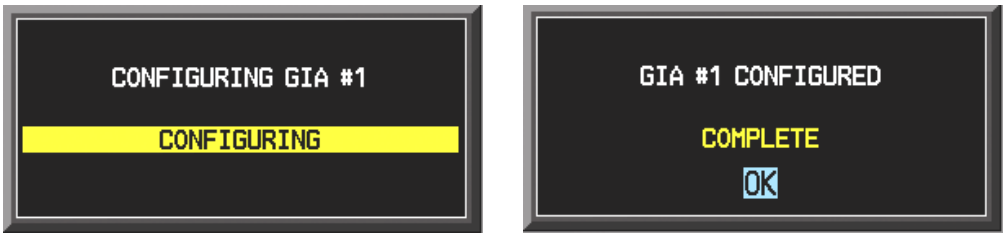


Figure 3-12, Configuration Status

3.7.3 Data Transmission Indicators

Several configuration screens utilize an indicator light system to show discrete (ON/OFF) data and/or hardware component status. Unless otherwise noted, the following applies to all such status indicators:

- Green Checkmark: Expected data is successfully received and is ON. A green check could also indicate that the parameter/component is working correctly.
- Red X: Expected data is not received. A red X could also indicate that a parameter/component is invalid.
- White N/A: Expected data is OFF, or no data is expected.

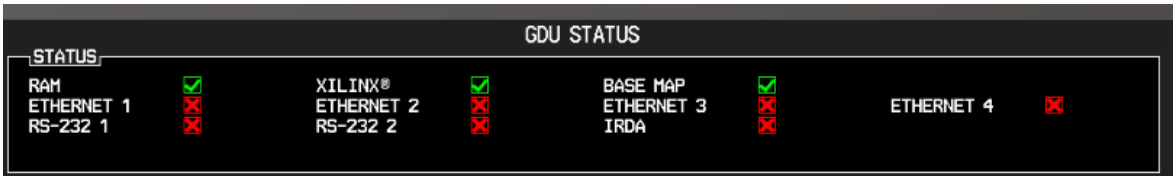


Figure 3-13, Data Transmission Indicators

3.7.4 Configuration Mode Navigation

Using the FMS knob as described in Section 3.1.2, a user can navigate through different pages and page groups in the Configuration Mode. For complete description and breakdown of each page, refer to the G1000 System Maintenance Manual listed in Table 1-3.

System Page Group		
1. System Status	5. System Upload	9. System Data Path Configuration
2. Time Configuration	6. Diagnostics Terminal	10. System Setup
3. Lighting Configuration	7. OEM Diagnostics	11. Manifest Configuration
4. System Audio	8. System Configuration	12. Maintenance Log
GDU Page Group		
1. Serial Configuration	4. Diagnostics	7. Alert Configuration
2. CDU Status Page	5. Ethernet Test	8. Airframe Configuration
3. Key Test	6. Video Test	9. TAWS Configuration
GIA Page Group		
1. Serial Configuration	3. GIA I/O Configuration	5. GIA Status Page
2. GIA RS-485 Configuration	4. GIA COM Setup	6. GIA CAN Configuration
GEA Page Group		
1. Engine Configuration	2. GEA Status Page	3. GEA Configuration
GTX Page Group		
1. Serial Configuration	2. Transponder Configuration	
GRS Page Group		
1. Inputs Configuration	2. GRS / GMU Calibration	
ADC Page Group		
1. ADC Configuration	2. GDC Configuration	
GFC Page Group		
1. GFC Configuration	2. GFC Status	
GMA Page Group		
1. GMA Configuration		
GDL Page Group		
1. GDL 69 Configuration	3. GDL 59 Configuration*	5. GSR 56 Configuration*
2. GDL 59 Status*	4. GDL 59 Report Configuration*	
RMT Page Group		
1. Remote Controller Status		
GWX Page Group		
1. GWX Configuration		
GTS Page Group *		
1. GTS Configuration		
OTHER Page Group *		
1. Stormscope		
CAL Page Group		
1. Fuel Tank Calibration	2. Flaps & Trim Calibration	3. HSCM Calibration

* Appears only if option is installed.

3.8 G1000 / GFC 700 Software Information

NOTE

The following sections provide a detailed description of loading all G1000 software and configuration files, which may be excessive for individual LRU removal and replacement. If removing and replacing individual LRUs, refer to Section 6 of this manual for the necessary steps.

3.8.1 G1000 Software Image

All software and configuration files were certified by Garmin and are considered part of FAA-approved Type Design data. Approved software and hardware definitions for each STC Configuration are defined on the appropriate General Arrangement drawing listed in Table 1-2.

G1000 software and configuration files are controlled via the approved software image part number listed on the General Arrangement drawing listed in Table 1-2. This software image is loaded into the G1000 using a software loader card. The installer shall create this software loader card by downloading the approved software image in accordance with section 3.8.2.

NOTE

Only SanDisk and Toshiba brand SD cards are recommended for use with the G1000 system.

NOTE

Installers may obtain this software image already on a loader card by ordering Garmin Part number 010-00798-XX directly from Garmin. Reference the General Arrangement drawing listed in Table 1-2 for part number information.

IMPORTANT!

To satisfy the G1000/GFC700 STC requirements for the 200/B200 series aircraft, it is critical that the technician install correct software image part number when servicing the G1000 system.

Approved software image part numbers are defined on the appropriate General Arrangement drawing (see Table 1-2).

CAUTION:

Be cautious when using software loader cards during maintenance. The G1000 system immediately initializes the card upon power-up. On-screen prompts must be given careful attention in order to avoid potential loss of data. Always read through procedures given in Sections 5, 6 and 7 before attempting to use the software loader cards.

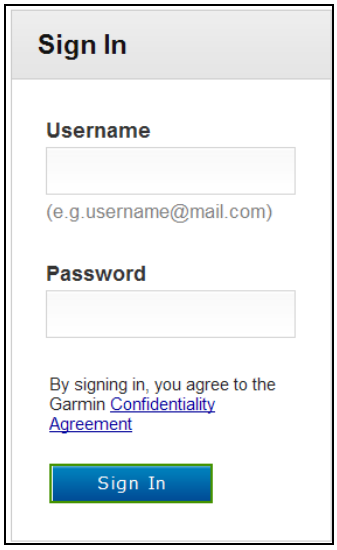
3.8.2 Loader Card Creation

The software image is an executable self-extracting file which builds the correct file structure onto an SD card for use loading software to the G1000 and GFC700. To create a software loader card, follow the procedures outlined below.

NOTE

In order to create a 200/B200 loader card, the individual/facility completing these procedures, must be an authorized King Air 200/B200 service center to gain access to the necessary data via the Garmin website.

1. Go to www.garmin.com and click on the Dealer Resource Center link in the lower portion of the home page. Enter username and password.

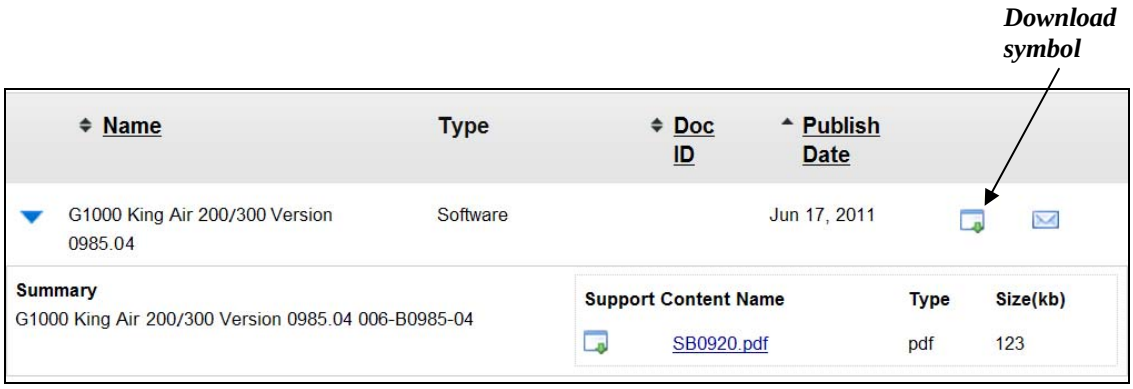


2. Click the I Agree button on the confidentiality agreement page.

3. Select Technical Tools then select Software Downloads.

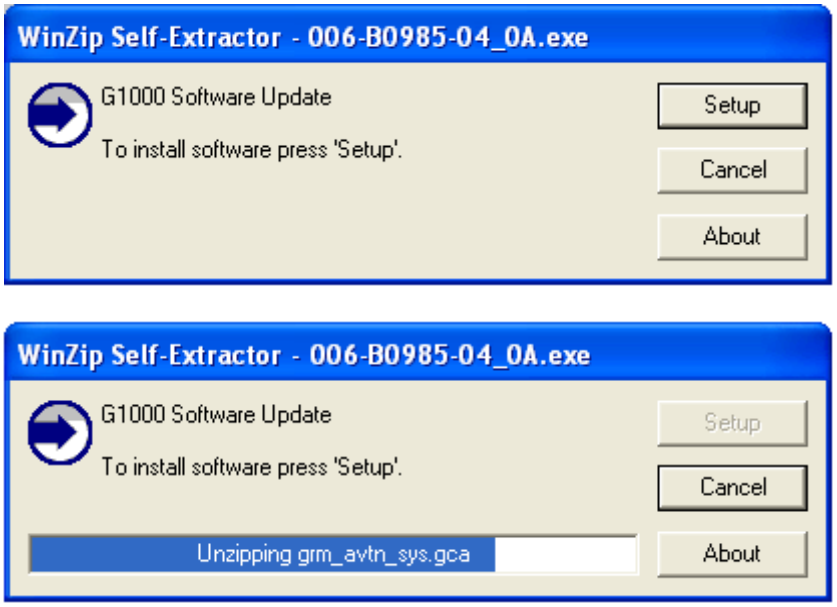
4. In the Keyword(s) filter, enter "0985" and click on the Go button.

5. A screen similar to the one shown below will appear. The numbers shown are for example only.



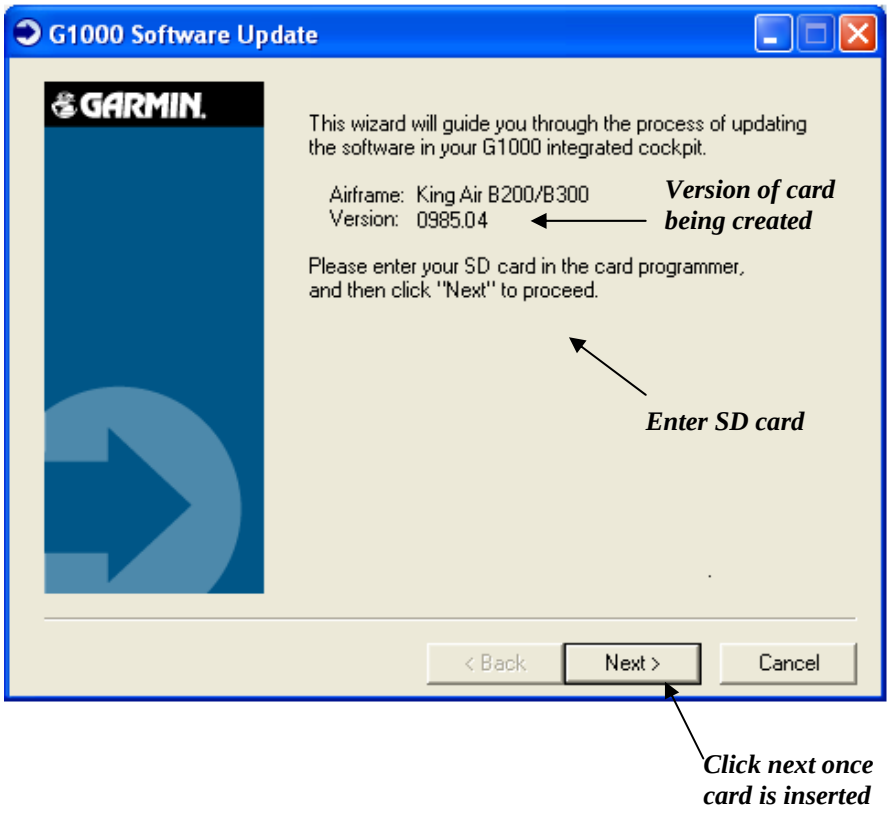
6. Click on the download symbol for the appropriate software version part number based upon the information provided in Garmin GA Drawing 005-00421-03 and save the file to the local hard drive.

7. Double-click the .exe file that was downloaded. The following window will pop-up on the screen. Ensure that there is an empty SD card in the card reader, and then click Setup.

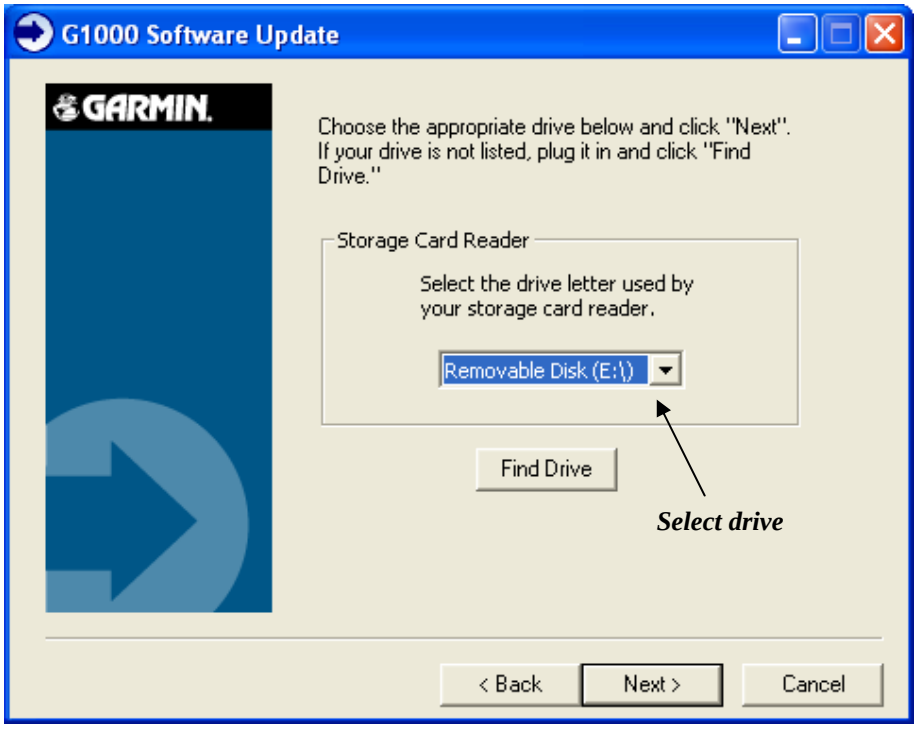


NOTE

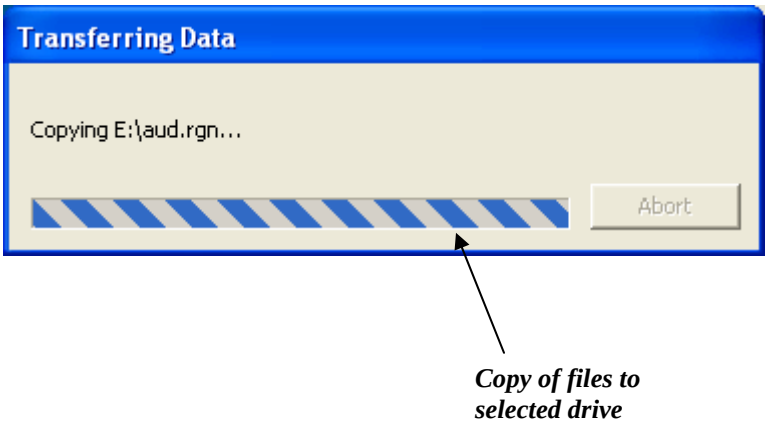
When the extraction begins, the program automatically deletes all current files on the SD card and copies the selected files to it, regardless of the file format on the SD card. Ensure files are not necessary, or card is empty before proceeding.


G1000 Software Update
GARMIN
This wizard will guide you through the process of updating the software in your G1000 integrated cockpit.
Airframe: King Air B200/B300
Version: 0985.04
Version of card being created
Please enter your SD card in the card programmer, and then click "Next" to proceed.
Enter SD card
< Back
Next >
Cancel
Click next once card is inserted

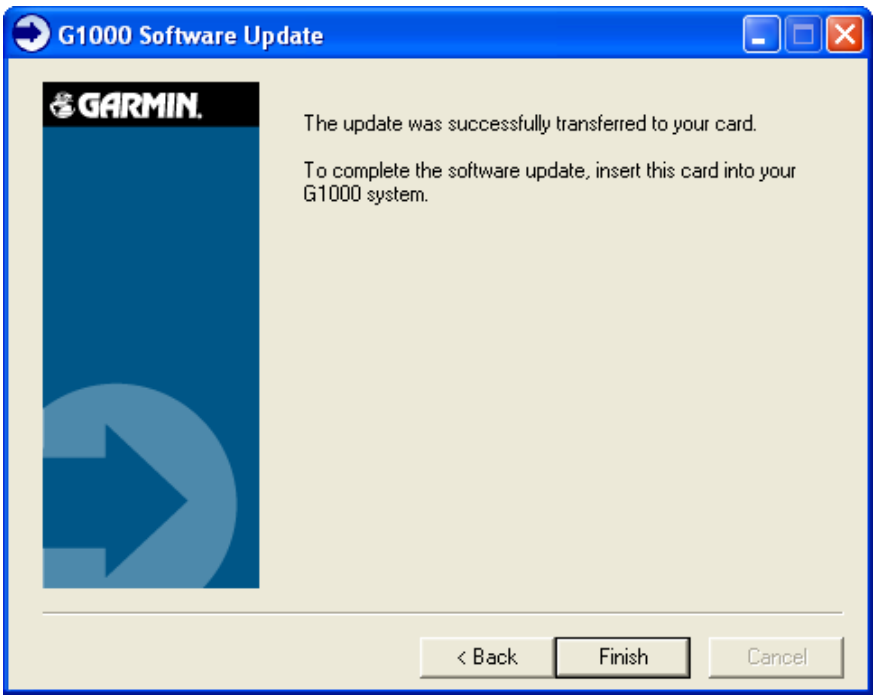
8. Ensure the card and correct drive letter is used, and click next.


G1000 Software Update
GARMIN
Choose the appropriate drive below and click "Next". If your drive is not listed, plug it in and click "Find Drive."
Storage Card Reader
Select the drive letter used by your storage card reader.
Removable Disk (E:\)
Find Drive
Select drive
< Back
Next >
Cancel

9. A window will pop-up onto the screen to indicate file progress.



10. Once successfully completed, the following message/window will pop-up. Click Finish to finalize SD card.


G1000 Software Update
GARMIN
The update was successfully transferred to your card.
To complete the software update, insert this card into your G1000 system.
< Back
Finish
Cancel

3.8.3 Software Files

Software files are defined by part number and version number on the General Arrangement drawing. See Table 1-2 for the correct General Arrangement drawing part numbers. Each G1000 / GFC 700 LRU reports the software version it currently contains to the user in two places.

- Normal System Mode: The AUX – SYSTEM STATUS page lists each LRU and the reported software version.
- Configuration Mode: The SYSTEM STATUS page (SYSTEM page group) reports more detailed LRU information, including software version, part number, and LRU status.

Software files are loaded to LRUs from the SYSTEM UPLOAD page in configuration mode. See Section 3.9.2.

3.8.4 Configuration File Descriptions

There are configuration files for baseline settings and various options. Configuration files contain preset selections for input/output channels, aircraft-specific settings, and LRU-specific settings.

IMPORTANT!

Certain software and configuration files are REQUIRED to be re-loaded during maintenance that involves removal and replacement of G1000 equipment.
Refer to Section 7 for re-configuration requirements for each G1000 LRU. Pay special attention to the configuration of options for the G1000.

3.8.5 Configuration File Storage

The G1000 system is designed to store all configuration settings in various places so that the configuration is retained in the aircraft during maintenance of units.

During system configuration, each file is sent directly to the applicable LRU where it is stored in local LRU memory (except GRS 77 & GDC 74B). Each file is also stored in the PFD internal memory. The applicable PFD also sends a copy of all configuration files to the 'Master Configuration module', located in the connector backshell (see Section 6.16). If the PFD is replaced, the configuration module retains all configuration files in the aircraft.

NOTE

The GRS 77 AHRS and GMU 44 Magnetometer do not have a configuration file. However, these LRUs do store calibration data acquired during the post installation checkout, which are characteristic to the specific installation. While performing maintenance on these units, re-calibration may be required. See Section 7.7.1 for more information on re-calibration criteria.

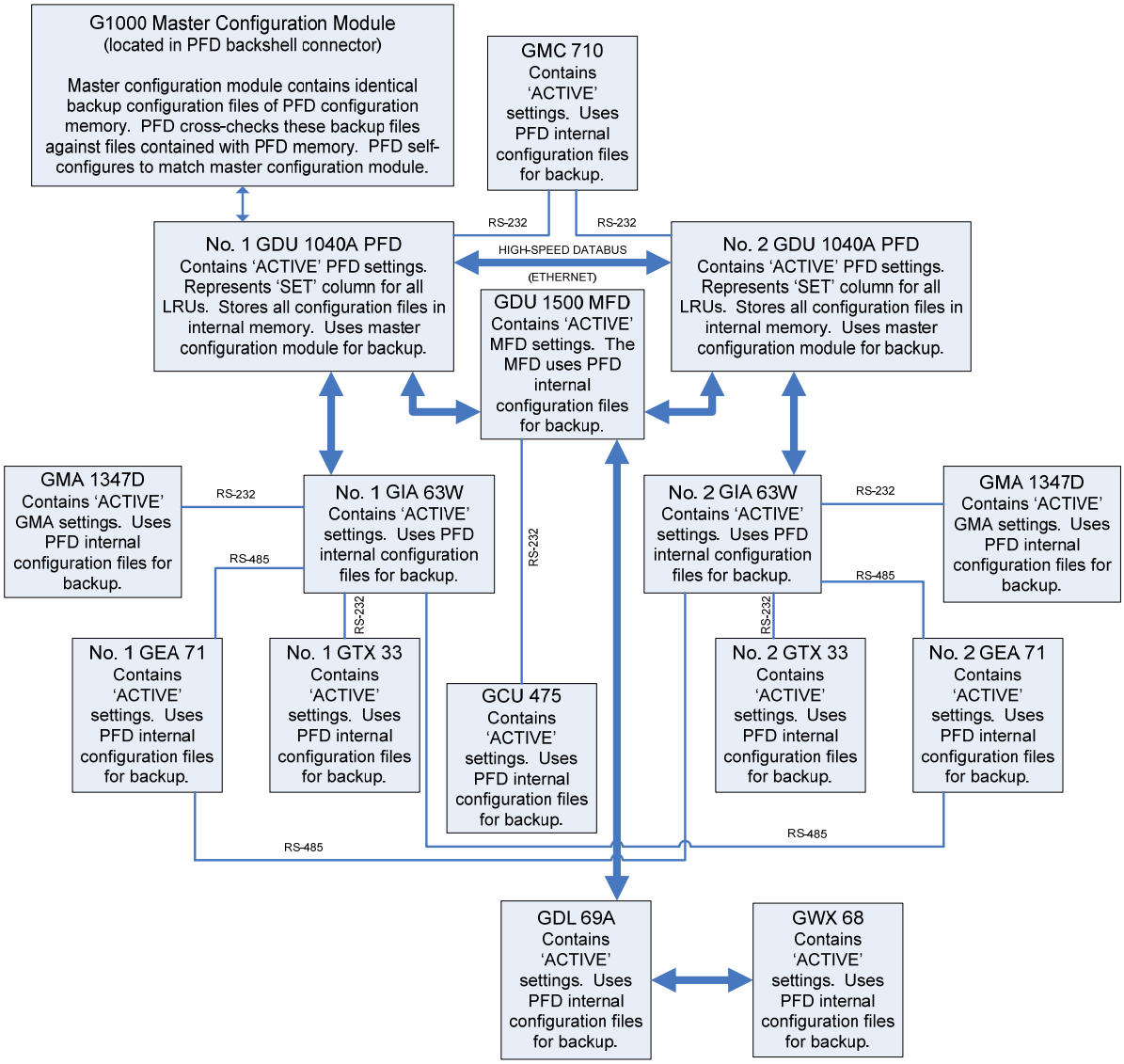

G1000 Master Configuration Module
(located in PFD backshell connector)
Master configuration module contains identical backup configuration files of PFD configuration memory. PFD cross-checks these backup files against files contained with PFD memory. PFD self-configures to match master configuration module.
GMC 710
Contains 'ACTIVE' settings. Uses PFD internal configuration files for backup.
RS-232
RS-232
No. 1 GDU 1040A PFD
Contains 'ACTIVE' PFD settings. Represents 'SET' column for all LRUs. Stores all configuration files in internal memory. Uses master configuration module for backup.
HIGH-SPEED DATABUS
(ETHERNET)
No. 2 GDU 1040A PFD
Contains 'ACTIVE' PFD settings. Represents 'SET' column for all LRUs. Stores all configuration files in internal memory. Uses master configuration module for backup.
GDU 1500 MFD
Contains 'ACTIVE' MFD settings. The MFD uses PFD internal configuration files for backup.
GMA 1347D
Contains 'ACTIVE' GMA settings. Uses PFD internal configuration files for backup.
RS-232
No. 1 GIA 63W
Contains 'ACTIVE' settings. Uses PFD internal configuration files for backup.
RS-485
RS-232
No. 2 GIA 63W
Contains 'ACTIVE' settings. Uses PFD internal configuration files for backup.
RS-232
GMA 1347D
Contains 'ACTIVE' GMA settings. Uses PFD internal configuration files for backup.
RS-485
RS-232
RS-232
No. 1 GEA 71
Contains 'ACTIVE' settings. Uses PFD internal configuration files for backup.
No. 1 GTX 33
Contains 'ACTIVE' settings. Uses PFD internal configuration files for backup.
GCU 475
Contains 'ACTIVE' settings. Uses PFD internal configuration files for backup.
No. 2 GTX 33
Contains 'ACTIVE' settings. Uses PFD internal configuration files for backup.
No. 2 GEA 71
Contains 'ACTIVE' settings. Uses PFD internal configuration files for backup.
RS-485
RS-485
GDL 69A
Contains 'ACTIVE' settings. Uses PFD internal configuration files for backup.
GWX 68
Contains 'ACTIVE' settings. Uses PFD internal configuration files for backup.

Figure 3-14, G1000 LRU Configuration File Storage

The GRS 77 and GDC 74B configuration modules function differently than the rest of the system. The GDC 74B's configuration file is loaded directly to GDC internal memory. A copy of the file is stored in the GDC configuration module.

The GRS 77 configuration module does not store any configuration settings. Instead, it stores calibration data recorded during installation calibration procedures.

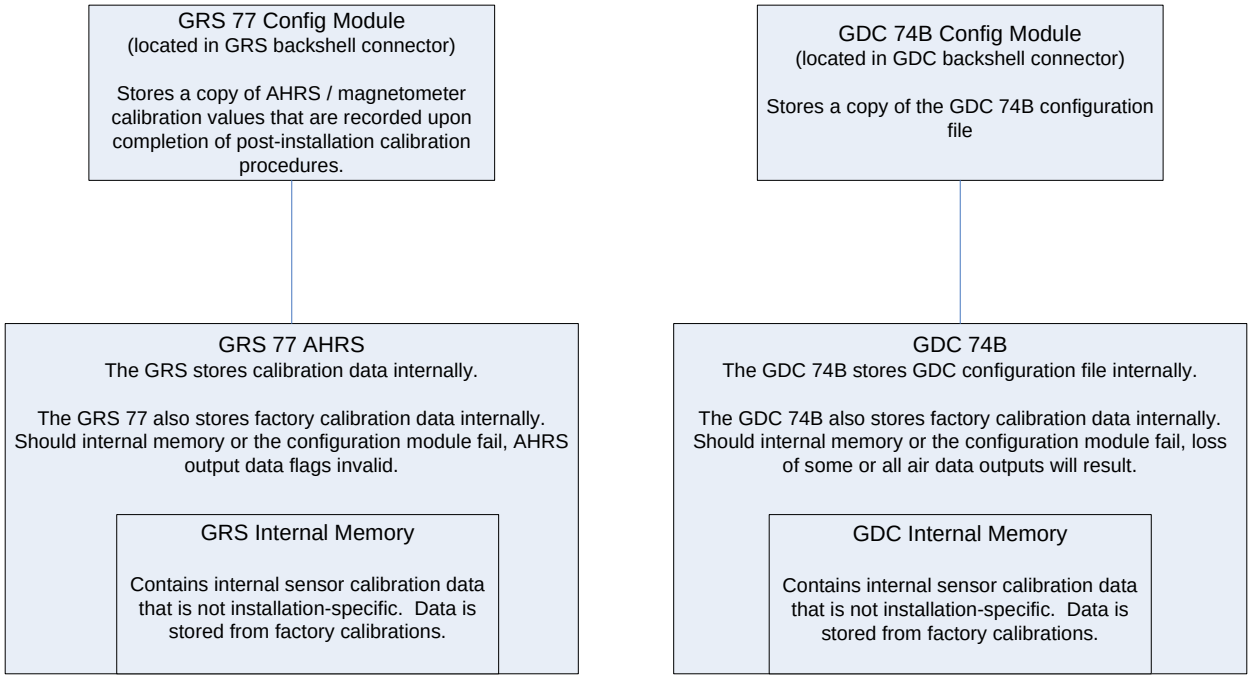

GRS 77 Config Module
(located in GRS backshell connector)
Stores a copy of AHRS / magnetometer calibration values that are recorded upon completion of post-installation calibration procedures.
GDC 74B Config Module
(located in GDC backshell connector)
Stores a copy of the GDC 74B configuration file
GRS 77 AHRS
The GRS stores calibration data internally.
The GRS 77 also stores factory calibration data internally. Should internal memory or the configuration module fail, AHRS output data flags invalid.
GRS Internal Memory
Contains internal sensor calibration data that is not installation-specific. Data is stored from factory calibrations.
GDC 74B
The GDC 74B stores GDC configuration file internally.
The GDC 74B also stores factory calibration data internally. Should internal memory or the configuration module fail, loss of some or all air data outputs will result.
GDC Internal Memory
Contains internal sensor calibration data that is not installation-specific. Data is stored from factory calibrations.

Figure 3-15, GRS/GDC Configuration Settings Storage

3.9 G1000 Software/Configuration Procedure

This section summarizes the procedures required to load software and configuration files to the G1000. It is intended to work as a central guide for technicians to use while performing maintenance on the aircraft. In sections of this manual where software is required to be reloaded, these sections will make reference back to this Section for instructions. The technician should use proper judgment regarding the context of maintenance required while following this section.

The following diagram depicts an overview of the software/configuration sequence for the G1000 system. This applies mostly to a new G1000 system which has not previously been powered up and is for informative purposes only.

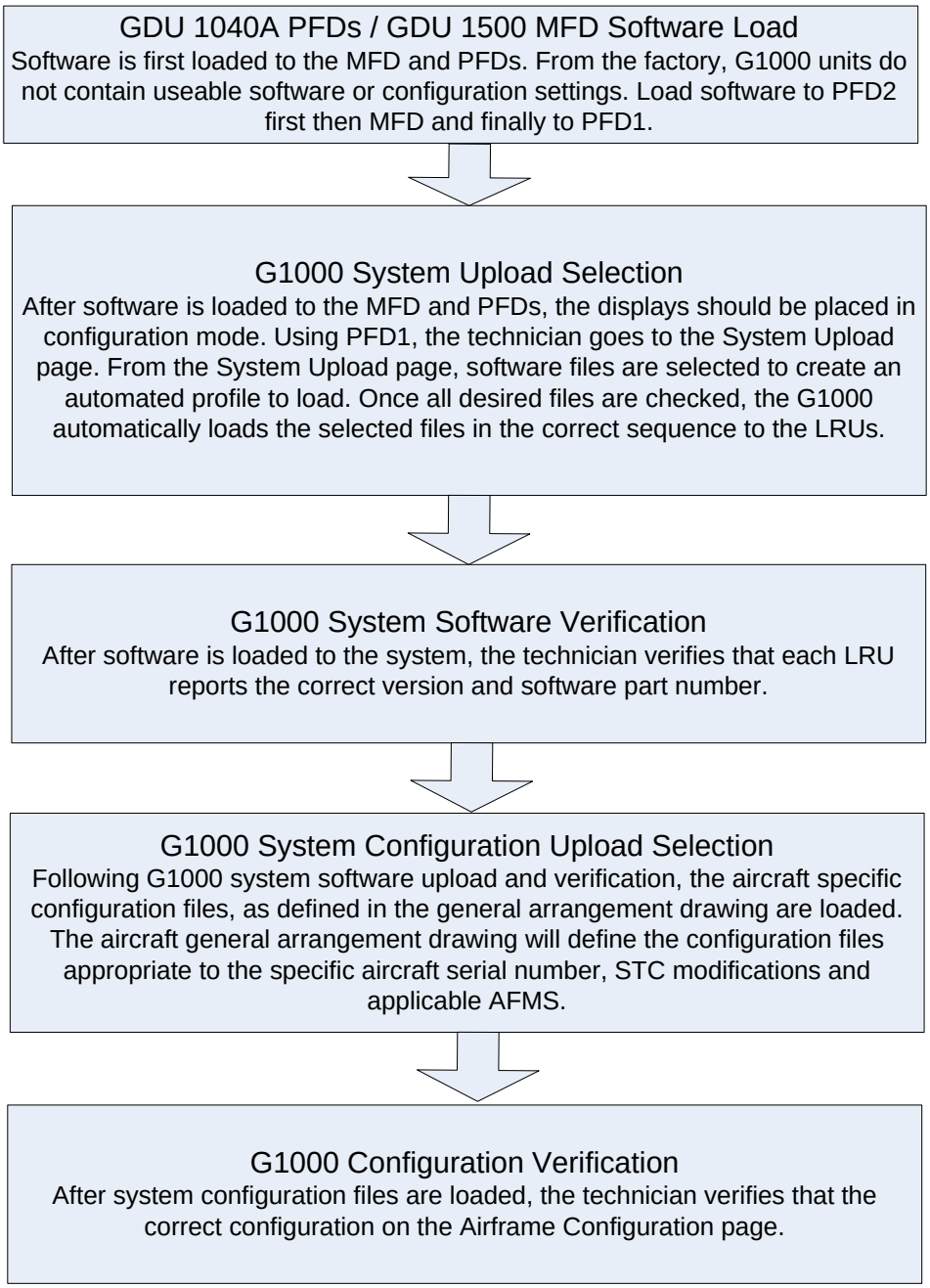

GDU 1040A PFDs / GDU 1500 MFD Software Load
Software is first loaded to the MFD and PFDs. From the factory, G1000 units do not contain useable software or configuration settings. Load software to PFD2 first then MFD and finally to PFD1.
G1000 System Upload Selection
After software is loaded to the MFD and PFDs, the displays should be placed in configuration mode. Using PFD1, the technician goes to the System Upload page. From the System Upload page, software files are selected to create an automated profile to load. Once all desired files are checked, the G1000 automatically loads the selected files in the correct sequence to the LRUs.
G1000 System Software Verification
After software is loaded to the system, the technician verifies that each LRU reports the correct version and software part number.
G1000 System Configuration Upload Selection
Following G1000 system software upload and verification, the aircraft specific configuration files, as defined in the general arrangement drawing are loaded. The aircraft general arrangement drawing will define the configuration files appropriate to the specific aircraft serial number, STC modifications and applicable AFMS.
G1000 Configuration Verification
After system configuration files are loaded, the technician verifies that the correct configuration on the Airframe Configuration page.

Figure 3-16, Software/Configuration Overview

3.9.1 MFD & PFD Software Load

Follow this procedure to load software to either PFD or the MFD.

1. With the G1000 and GFC 700 powered on, pull the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Insert the software loader card into top card slot in the desired PFD or MFD. See Section 3.8 for information on creating or obtaining a software loader card.

NOTE

If loading software to all displays, it is preferred to load PFD 2 first, followed by the MFD and then PFD 1.

3. While holding the ENT key on the display, restore power by closing the appropriate circuit breaker(s).
4. When the words INITIALIZING SYSTEM appear in the upper left corner of the display, release the ENT key.
5. Press the ENT key or the sofkey labeled 'YES' to acknowledge the following prompt (see also note below for MFD):

NOTE

For the MFD, use the far right soft key on the MFD in lieu of the ENT key where called out in Steps 3 through 6. The ENT key for the MFD is located on the GCU 477 FMS controller and may not function prior to software load.

6. The following screen is displayed.

7. New software is loaded to the display and the following screen is displayed:

8. Press the softkey labeled 'NO'. Note that the splash screen will need to be loaded after all software and configuration loading is completed.
9. When complete, the display starts in configuration mode displaying the "System Status" page. Do not remove power.
10. Remove the Loader Card from the display and insert it into the top card slot on another display if desired. Repeat Steps 3 through 8 as needed.

IMPORTANT!

For the rest of the software/configuration procedure, do not operate the MFD or PFD 2 while loading software or configuration files unless specifically instructed to do so. A failed or cancelled load may result.

3.9.2 G1000 System Software Upload

The System Upload page allows a technician to load LRU software and system configuration files individually or in an automated sequence. Depending on what maintenance is performed, software and/or configuration files may need to be reloaded to LRUs. Follow the steps below as a guide to use the System Upload page. The figures contained in the following sections represent software version 0985.04 and later. Earlier software versions are similar.

IMPORTANT!

Do not allow power to be removed from the system when loading software. Remove power only when instructed by the following procedure. As a general rule, all displays should be in the same mode (configuration or normal) unless instructed otherwise.

1. Ensure loader card is inserted into top card slot of PFD1. On PFD1, select the "System Upload" page using the PFD1 small FMS knob.
2. Activate the cursor and use the PFD1 small FMS knob to highlight the GROUP field. Scroll small FMS knob to select the appropriate airframe and engine combination. Press the PFD1 ENT key to select the configuration.

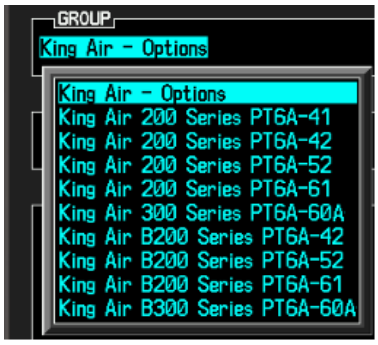

GROUP
King Air - Options
King Air - Options
King Air 200 Series PT6A-41
King Air 200 Series PT6A-42
King Air 200 Series PT6A-52
King Air 200 Series PT6A-61
King Air 300 Series PT6A-60A
King Air B200 Series PT6A-42
King Air B200 Series PT6A-52
King Air B200 Series PT6A-61
King Air B300 Series PT6A-60A

Figure 3-17, Airframe Options

3. Once an airframe type is selected the cursor moves to the ITEM window. Rotate the PFD1 small FMS knob to activate the drop-down menu. Move the cursor to highlight the appropriate propeller configuration for the aircraft and press ENT on PFD1.

NOTE

Not all propellers are available for selection with each airframe and engine configuration. Only those props that are approved for installation on a particular airframe/engine are available in the drop down selection window.

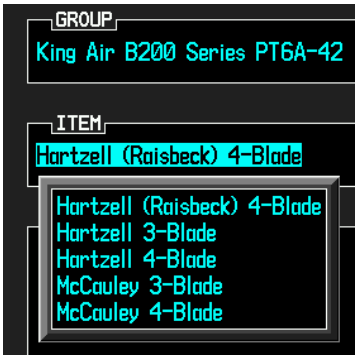


Figure 3-18, Propeller Options

4. Once the propeller type is selected the cursor moves to the PRODUCT windo. Select the software and/or configuration which is to be loaded for each G1000 LRU.

NOTE

The PRODUCT window displays information regarding each G1000 LRU. The LRU column depicts the reported software version of the LRU, whereas the CARD VERS column shows the LRU software version stored on the Loader Card. If an inequality between the LRU VERS and CARD VERS columns is detected, the SOFTWARE and CONFIGURATION boxes will be pre-selected (checked) for each LRU reporting a different software version than the one on the card. The following softkeys provide an easy way to select files:

CHK ALL: Selects all files, both configuration and software

CHK SW: Selects all SW files only.

CHK CFG: Selects all configuration files only.

CLR ALL: Clears all selections.

LOAD: Starts the software loading process.

NOTE

When loading a new software image or re-loading software to a particular LRU, it may not be necessary to reload all software and configuration files. The technician should be sure of the software requirements and load the appropriate files, including any options. If there is any doubt, the CHK ALL softkey is recommended.

5. After verifying that the desired software and configuration files are checked, press the LOAD softkey. The G1000 system automatically begins loading software and default configuration files to the selected LRUs in the proper order.

Figure 3-19, Configuration/Software Load Page

6. Press the LOAD softkey.

7. Observe software loading progress and verify software load completes without errors as indicated by the following:

   - Green “PASS” or White “N/A” in SOFTWARE and CONFIGURATION columns.
   - “Upload Complete…….COMPLETE” in the summary box.

8. Press PFD1 ENT key to acknowledge the “Upload Complete” box.

3.9.3 Software Check

Anytime software and configuration loading procedures are accomplished during maintenance, conduct a final software review of the system.

1. Start the PFD in Configuration Mode as described in Section 3.7.
2. Go to the System Status page using the FMS knob. Activate the cursor and toggle to the LRU window.

Figure 3-20, System Status

3. The PFD System Status page shows a list of LRUs in the LRU window. Activate the cursor and highlight the LRU window. Use the FMS knob to scroll through the list in the window and verify that the software part number and version displayed in the DATA window matches the information in General Arrangement drawing listed in Table 1-2. Record the results on the next page.

IMPORTANT!

It is essential that the software versions be checked and matched against the listed versions in the General Arrangement drawing listed in Table 1-2. Software Configuration is a critical part of the G1000 operation and must be verified before returning an aircraft to service.

If any software version and/or part number does not match those specified by the General Arrangement drawing, or if the software is not successfully loaded, DO NOT continue. Troubleshoot and resolve the issue before continuing.

Table 3-1, Software Verification

SYSTEM	SW VER OK	SYSTEM	SW VER OK	SYSTEM	SW VER OK
*COM 1		GFC CERT YM		GSA PTCH MON	
*COM 2		GIA1		GSA PTCH TRM C	
GCU		GIA1 AUDIO		GSA PTCH TRM M	
GDC1		GIA2		GSA ROLL CTL	
GDC1 FPGA		GIA2 AUDIO		GSA ROLL MON	
GDC2		GMA1		GSA YAW CTL	
GDC2 FPGA		GMA2		GSA YAW MON	
GDL69		GMC		GWX	
GEA1		GMU1		GWX FPGA	
GEA2		GMU1 FPGA		MFD1	
GFC CERT GIA1		GMU2		MFD1 FPGA	
GFC CERT GIA2		GMU2 FPGA		*NAV 1	
GFC CERT PC		GPS1		*NAV 1 FPGA	
GFC CERT PM		GPS2		*NAV 2	
GFC CERT PT C		GRS1		*NAV 2 FPGA	
GFC CERT PT M		GRS1 FPGA		PFD1	
GFC CERT RC		GRS2		PFD1 FPGA	
GFC CERT RM		GRS2 FPGA		PFD2	
GFC CERT YC		GSA PTCH CTL		PFD2 FPGA	

* This item only verified when GIA p/n 011-01105-20 is installed

3.10 TAWS-A Support Configuration

This section applies only to installations with the TAWS-A option. The procedures outlined in this section must be followed to load the necessary configuration files required to enable TAWS-A gear and flap messages. A TAWS-A enable card is also required for this option (see Section 3.31.)

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to select "**TAWS-A Support**". Press **ENT** key on PFD1.
4. Verify the "**TAWS-A Support**" is displayed in the "Item" window. Press "**LOAD**".

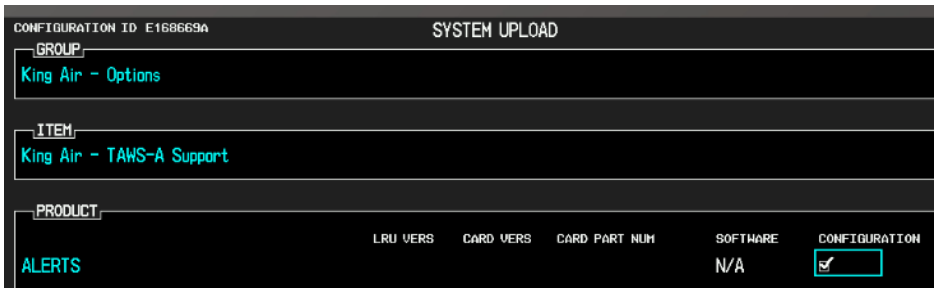


Figure 3-21, TAWS-A Support Configuration

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for ALERTS.
   - "Upload Complete……COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. Deactivate cursor.

3.11 TAWS-A Voice No Callout Option Configuration

This section applies only to installations with the TAWS-A option. If TAWS-A voice callouts (400, 300, 200, 100) are not desired, follow the procedures outlined in this section to load the necessary configuration files to disable TAWS-A voice callouts.

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to select "**TAWS-A No Voice Callout Installation Option**". Press **ENT** key on PFD1.
4. Verify the "**TAWS-A No Voice Callout Installation Option**" is displayed in the "Item" window. Press "**LOAD**".

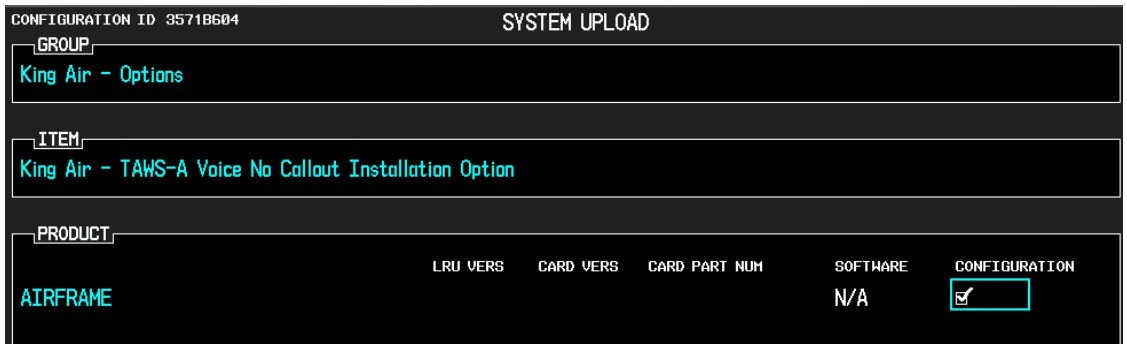


Figure 3-22, TAWS-A Voice No Callout Configuration

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for AIRFRAME.
   - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. Deactivate cursor.

3.12 TAWS-A Voice Callout Option Configuration

This section applies only to installations with the TAWS-A option. This step is necessary only if TAWS-A voice callouts (400, 300, 200, 100) have been disabled and are now desired. TAWS-A voice callouts are the default configuration. Follow the procedures outlined in this section to load the necessary configuration files to enable TAWS-A voice callouts.

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to select "**TAWS-A Voice Callout Installation Option**". Press **ENT** key on PFD1.
4. Verify the "**TAWS-A Voice Callout Installation Option**" is displayed in the "Item" window. Press "**LOAD**".

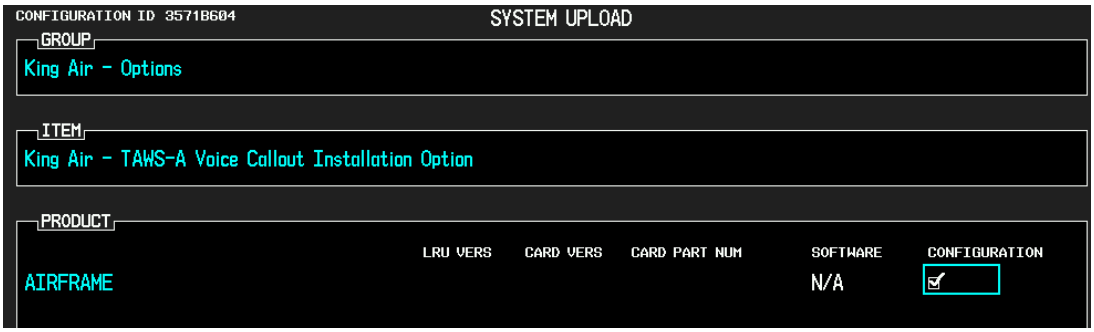


Figure 3-23, TAWS-A Voice Callout Configuration

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for AIRFRAME.
   - "Upload Complete……COMPLETE" in the summary box.
6. Select "**ENT**" key on PFD1 to acknowledge upload complete.
7. Deactivate cursor.

3.13 ADF Option Configuration

This section loads the necessary configuration files for those aircraft equipped with an ADF.

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**SYSTEM UPLOAD**" page using the small FMS knob.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to select "**ADF Option**". Press **ENT** key on PFD1.
4. Verify the "**ADF Option**" is displayed in the "Item" window. Press "**LOAD**".

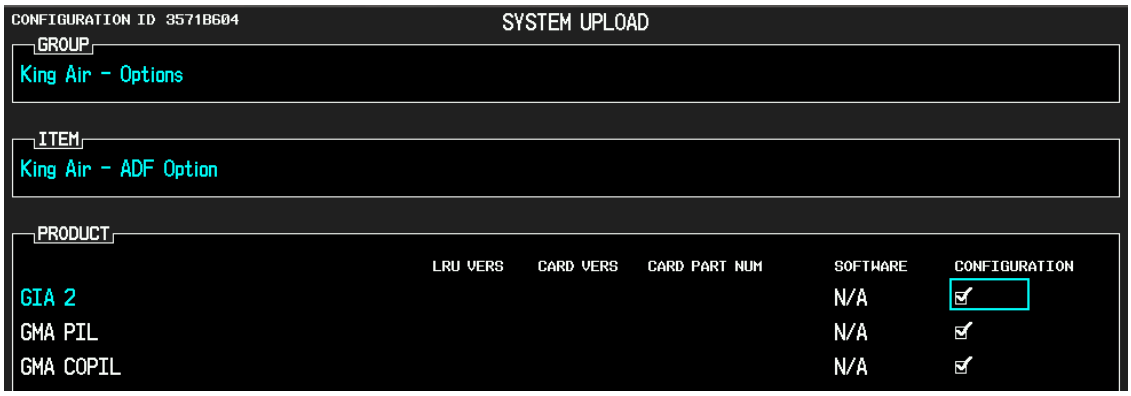


Figure 3-24, ADF Configuration

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for GIA2, GMA PIL, and GMA COPIL.
   - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. Deactivate cursor.

3.14 DME Option Configuration

This section loads the necessary configuration files for those aircraft equipped with a DME.

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**DME Option**". Press **ENT** key on PFD1.
4. Verify the "**DME Option**" is displayed in the "Item" window. Press "**LOAD**".

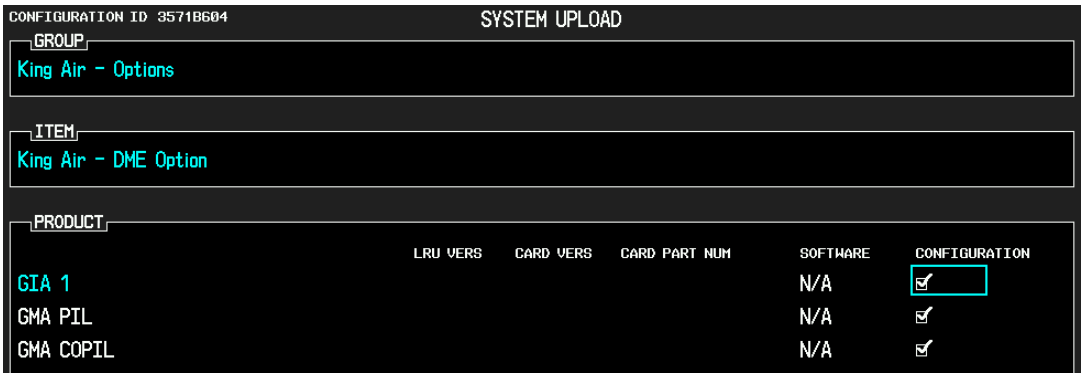


Figure 3-25, DME Configuration

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for GIA1, GMA PIL and GMA COPIL.
   - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. Deactivate cursor.

3.15 RAD ALT Option Configuration

This section loads the necessary configuration files for those aircraft equipped with a radio altimeter.

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**RAD ALT Option**". Press **ENT** key on PFD1.
4. Verify the "**RAD ALT Option**" is displayed in the "Item" window. Press "**LOAD**".

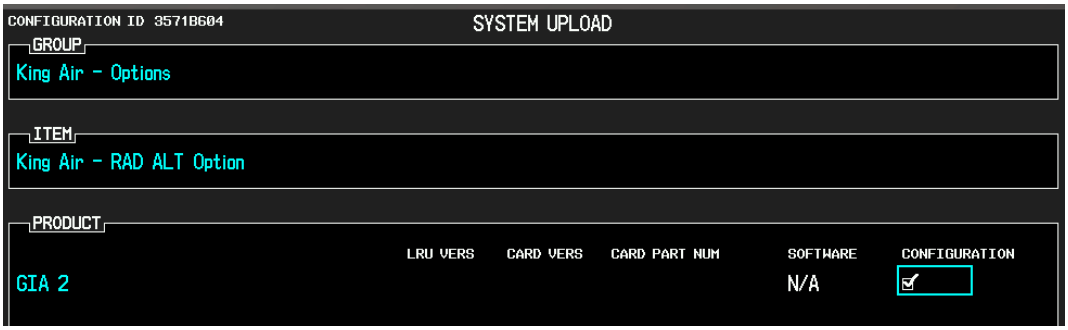


Figure 3-26, RAD ALT Configuration

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for GIA2.
   - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. Deactivate cursor.

3.16 Non-Garmin Traffic System Option Configuration

Follow this procedure to enable the traffic system function for the G1000 system if required.

NOTE

The G1000 can only be configured for TIS or TAS but not both. Performing this procedure will automatically disable the TIS function. Coordinate this configuration with section 7.13 "Traffic System Functional Check".

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**System Upload**" page on PFD1 using the small FMS knob.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**Traffic System Option**". Press **ENT** key on PFD1.
4. Verify the "**Traffic System Option**" is displayed in the "Item" window. Press "**LOAD**".

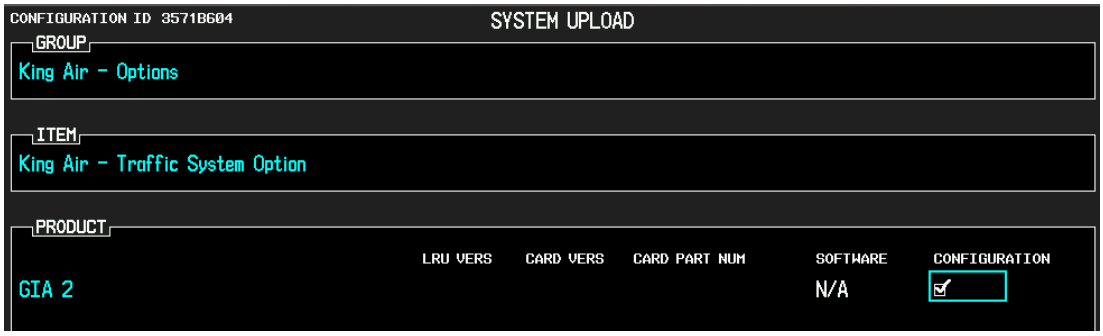


Figure 3-27, Non-Garmin Traffic System Configuration

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for GIA 2.
   - "Upload Complete……COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. Deactivate cursor.

3.17 GTS 8XX Traffic System Configuration

Follow this procedure to enable the GTS 8XX traffic system function for the G1000 system if required.

NOTE

The G1000 can only be configured for TIS or TAS/TCAS but not both. Performing this procedure will automatically disable the TIS function. Coordinate this configuration with Section 7.26 "GTS 8XX Traffic System Functional Check".

NOTE

Configuration of the GTS 8XX TAS/TCAS I will require the GTS system to be configured with the aircraft mode S address. Coordinate this configuration with Section 3.35 "Aircraft Registration Number Entry".

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**System Upload**" page on PFD1 using the small FMS knob.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**GTS 8XX TAS/TCAS1**". Press **ENT** key on PFD1.
4. Verify the "**GTS 8XX TAS/TCAS1**" is displayed in the "Item" window. Press "**LOAD**".

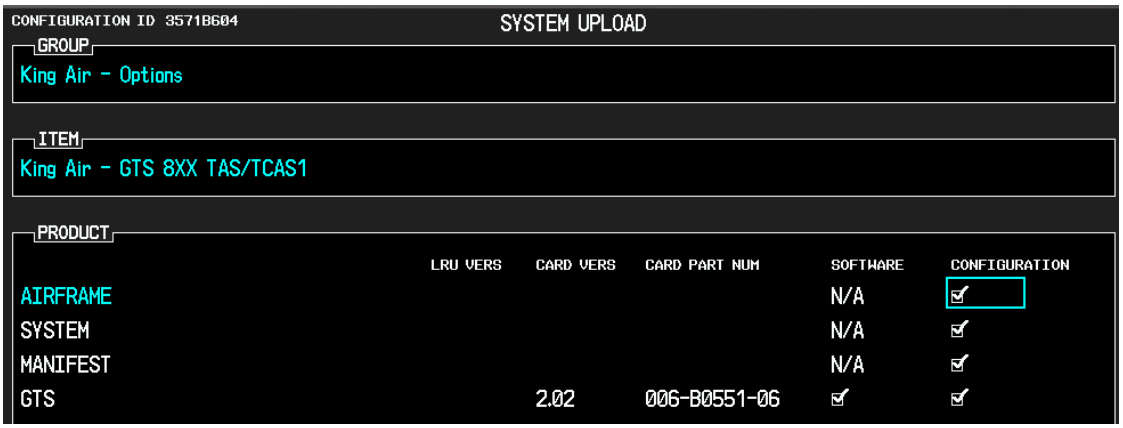


Figure 3-28, GTS 8XX TAS/TCAS1 Configuration

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for AIRFRAME, SYSTEM, MANIFEST and GTS.
   - Green "PASS" in Software column for GTS.
   - "Upload Complete……COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. Deactivate cursor.
8. On the MFD, verify that the GTS software part number and version matches the information in G1000/GFC 700 AFCS, King Air 200/B200, 005-00421-03, General Arrangement drawing.

3.18 StormScope (WX-500) Option Configuration

Follow this procedure to enable the lightning system option (WX-500) for the G1000 system if required.

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**System Upload**" page using the PFD1 small FMS knob.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**Lightning System Option**". Press **ENT** key on PFD1.
4. Verify the "**Lightning System Option**" is displayed in the "Item" window. Press "**LOAD**".

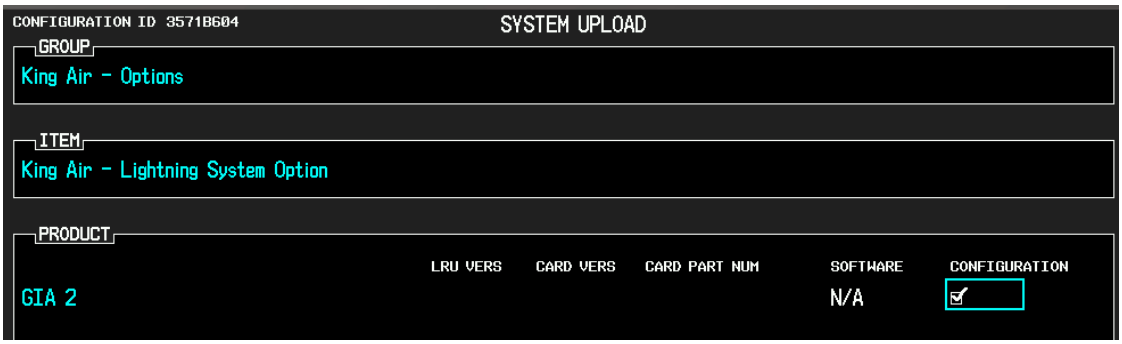


Figure 3-29, Lightning System Option Configuration

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for GIA 2.
   - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. Deactivate cursor.

3.19 Stormscope (WX-500) Configuration Load Confirmation.

1. With PFD1 in configuration mode, use the PFD1 large FMS knob to select **OTHER** and the Stormscope configuration page.

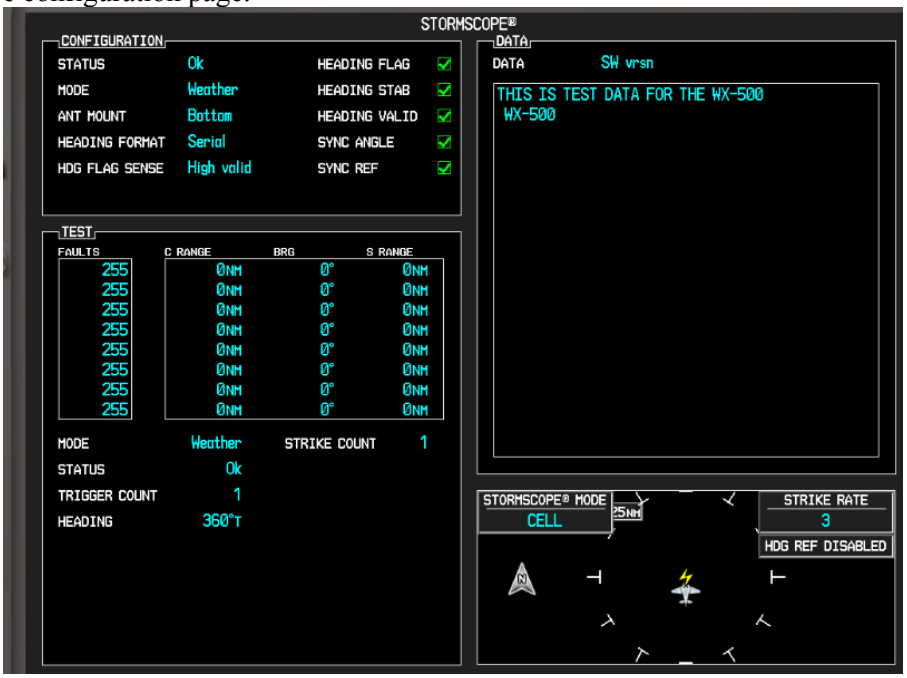


Figure 3-30, Stormscope Configuration Page

2. Activate the cursor to highlight the DATA field. Use the small FMS knob to open the drop down menu then select '**Config**' and press **ENT** key on the PFD1.

Figure 3-31, Stormscope Configuration

3. Verify that the DATA window shows the following:

Hdg: None:	J3-1	Jumper
	J3-2	Jumper
Hdg Valid Flag		No Fla
Flag Sense		+invld
	J3-4	Open
Hdg Value	<aircraft heading>	
Inhibit Line	Off	
Antenna Mount	Bottom	
	J3-3	Open

4. Deactivate the cursor.

NOTE

The DATA window is only updated once every five seconds.

3.20 ESP Support (with AOA) Option Configuration

This section applies only to installations with the ESP option with AOA modes. A new Safe Flight lift computer is used for this configuration. The procedures outlined in this section must be followed to load the necessary configuration files required to enable ESP messages and functions. An Enhanced AFCS unlock card is also required for this option (see Section 3.34.)

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**200/B200 ESP Support (with AoA)**". For software version 0985.03, the option is labeled "**King Air 200/B200 Series - ESP Support**". Press **ENT** key on PFD1.
4. Verify "**200/B200 ESP Support (with AoA)**" or "**King Air 200/B200 Series - ESP Support**" is displayed in the "Item" window. Press "**LOAD**".

Figure 3-32, ESP Support Configuration

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for AIRFRAME, MANIFEST, ALERTS, GIA1, GIA2 and GEA 1.
   - Green "PASS" in Software column for GIA CERT, PITCH CERT, ROLL CERT, YAW CERT and PITCH TRIM CERT.
   - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. Deactivate cursor.

3.21 ESP Support (no AOA) Option Configuration

This section applies only to installations with the ESP option without AOA modes (available in software version 0985.04 and later.) The original Safe Flight lift computer is used for this configuration. The procedures outlined in this section must be followed to load the necessary configuration files required to enable ESP messages and functions. An Enhanced AFCS unlock card is also required for this option (see Section 3.34.)

NOTE

If the ESP Support (with AOA) Option Configuration was previously loaded (see Section 3.20), the baseline configuration must be reloaded before proceeding with this procedure. Reload the baseline configuration for the specific airframe and all applicable options as described in Section 3.9. Reloading the baseline configuration disables all previously enabled options.

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**ESP Support (no AOA)**". Press **ENT** key on PFD1.
4. Verify "**ESP Support (no AOA)**" is displayed in the "Item" window. Press "**LOAD**".

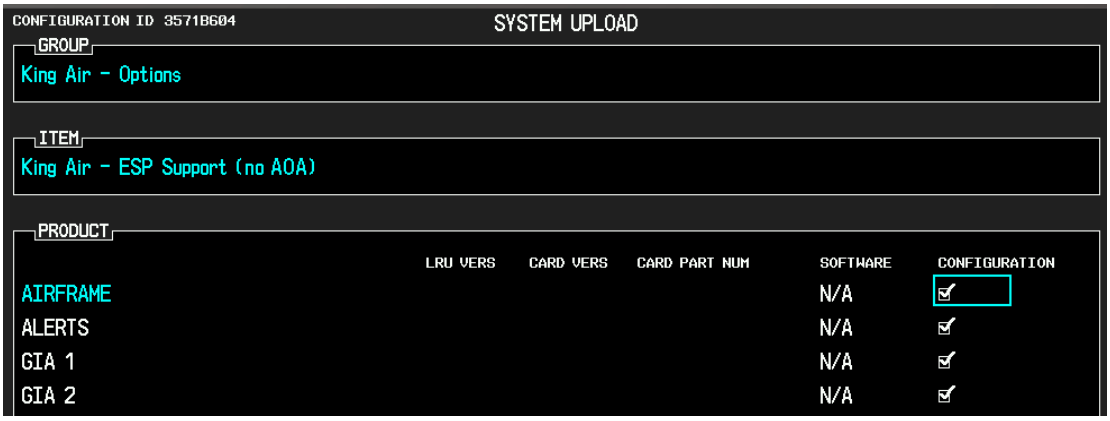


Figure 3-33, ESP Support Configuration

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for AIRFRAME, ALERTS, GIA1 and GIA2.
   - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. Deactivate cursor.

3.22 GDL 59 Wi-Fi Data Link Option Configuration

Follow this procedure to enable the optional GDL 59 Wi-Fi data link function. Note that if the GDL 59 option is reloaded for any reason, the GSR 56 option must also be reloaded per Section 3.23.

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**GDL 59**". Press **ENT** key on PFD1.
4. Verify "**GDL 59**" is displayed in the "Item" window. Press "**LOAD**".

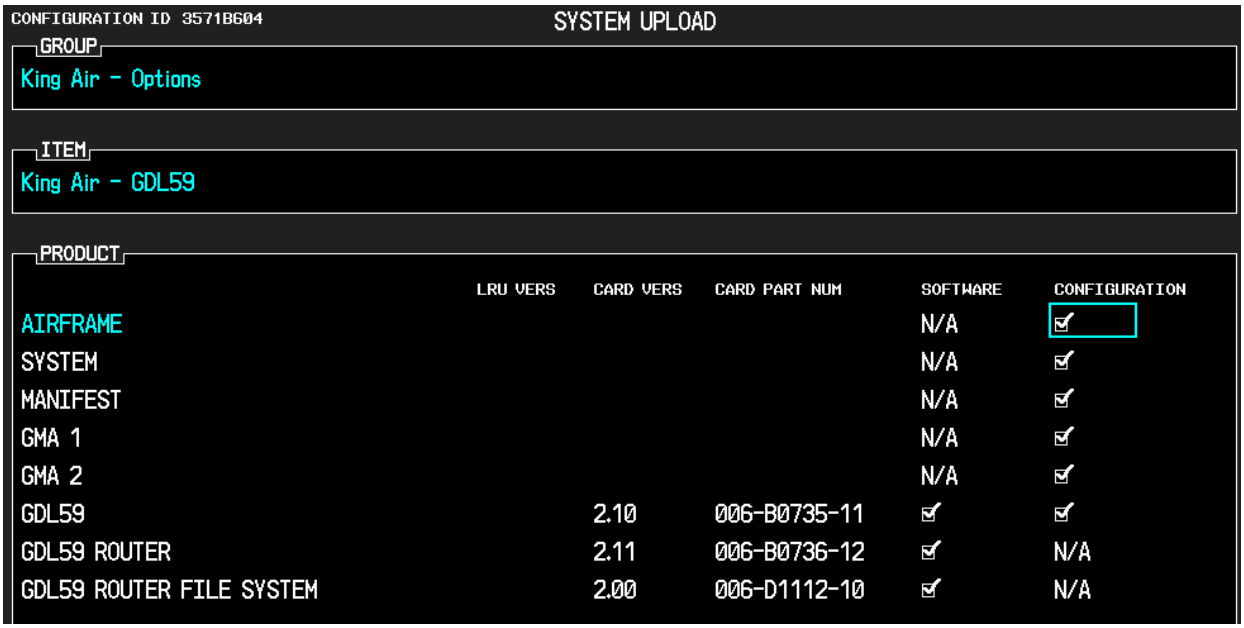


Figure 3-34, GDL 59 Configuration

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for AIRFRAME, SYSTEM, MANIFEST, GMA 1, GMA 2, and GDL 59.
   - Green "PASS" in software column for GDL59, GDL59 ROUTER, and GDL59 ROUTER FILE SYSTEM.
   - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. Deactivate cursor.
8. On the MFD, verify that the GDL59 software part number and version matches the information in G1000/GFC 700 AFCS, King Air 200/B200, 005-00421-03, General Arrangement drawing.

3.23 GSR 56 Satellite Reciever Option Configuration

Follow this procedure to enable the optional GSR 56 satellite receiver function. Note that the GDL 59 wi-fi data link option must be loaded per Section 3.21 prior to loading the GSR 56 option.

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**GSR 56**". Press **ENT** key on PFD1.
4. Verify "**GSR 56**" is displayed in the "Item" window. Press "**LOAD**".

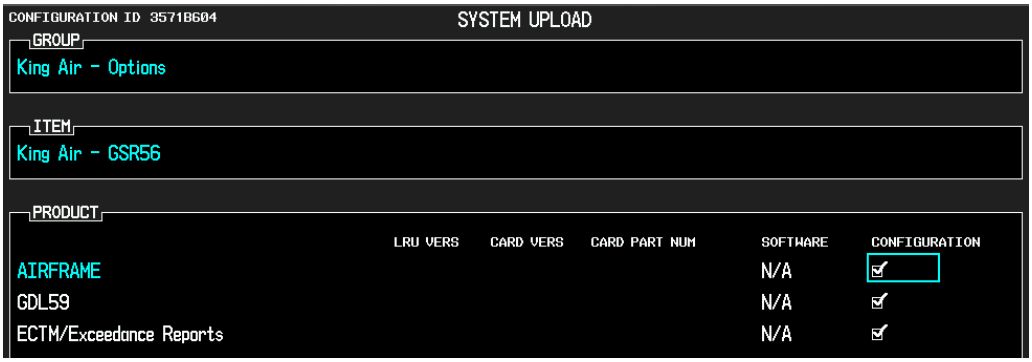


Figure 3-35, GSR 56 Configuration

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for AIRFRAME, GDL 59, and ECTM/Exceedance Reports.
   - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. Deactivate cursor.

3.24 POTS Handset Configuration

Follow this procedure to enable a POTS handset if installed. Note that the GDL 59 wi-fi data link option must be loaded per Section 3.21 prior to loading the POTS handset configuration.

1. Power up the PFD1 in configuration mode.
2. On the PFD1, select GDL page group using the large FMS knob.
3. Using the small FMS knob select the GDL 59 Configuration page.
4. Activate the cursor. Use the large FMS knob to select POTS CONNECTED in the PHONE SETTINGS field.
5. Use the small FMS knob to select **YES** and press the **ENT** key.
6. After GDL 59 is configured, press the **ENT** key.

3.25 GSM 85A Servo Mount Configuration

For software versions 0985.04 and later, the section 4.9.1 slip clutch torque check procedure requires the correct type of GSM servo gearbox to be configured. It is not required to load this configuration if GSM 86 servo gearboxes are installed for all servos (default configuration.)

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**King Air 200/B200 – GSM 85A Servo Mounts**". Press **ENT** key on PFD1.
4. Verify "**King Air 200/B200 – GSM 85A Servo Mounts**" is displayed in the "Item" window.
5. Deselect any servos that have GSM 86 servo gearboxes installed by scrolling to the servo and pressing **ENT** key on PFD1.
6. When all of the servos that have GSM 85A servo gearboxes are selected, press "**LOAD**".

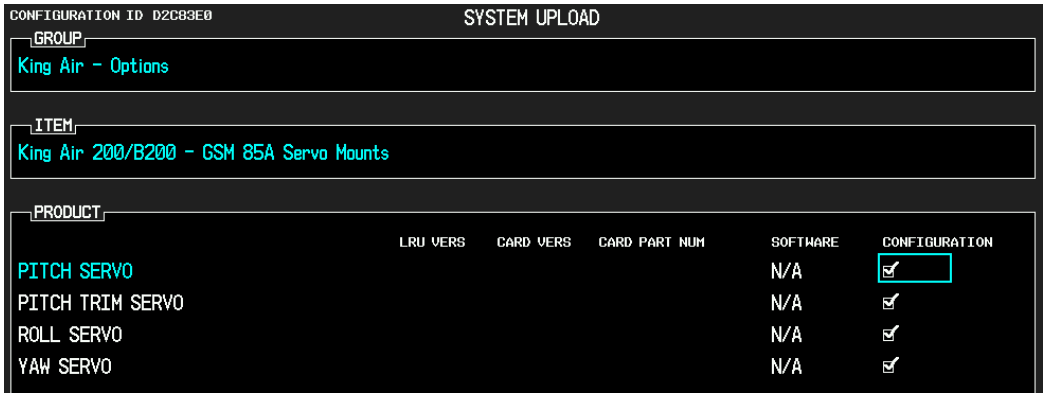


Figure 3-36, GSM 85A Servo Mount Configuration

7. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for PITCH SERVO, PITCH TRIM SERVO, ROLL SERVO and/or YAW SERVO (as selected).
   - "Upload Complete…….COMPLETE" in the summary box.
8. Press **ENT** key on PFD1 to acknowledge upload complete.
9. Deactivate cursor.
10. Verify the servo mount configuration per section 3.27.

3.26 GSM 86 Servo Mount Configuration

For software versions 0985.04 and later, the section 4.9.1 slip clutch torque check procedure requires the correct type of GSM servo gearbox to be configured. If a GSM 85A servo gearbox is replaced by a GSM 86 servo gearbox, follow the steps below to load the configuration. It is not necessary to load this configuration if GSM 86 servo gearboxes are already installed for all servos (default configuration.)

1. With the loader card in the top slot of PFD1 and PFD1 in configuration mode, select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight **King Air - Options** and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**King Air 200/B200 – GSM 86 Servo Mounts**". Press **ENT** key on PFD1.
4. Verify "**King Air 200/B200 – GSM 86 Servo Mounts**" is displayed in the "Item" window.
5. Deselect any servos that have GSM 85A servo gearboxes installed by scrolling to the servo and pressing **ENT** key on PFD1.
6. When all of the servos that have GSM 86 servo gearboxes are selected, press "**LOAD**".

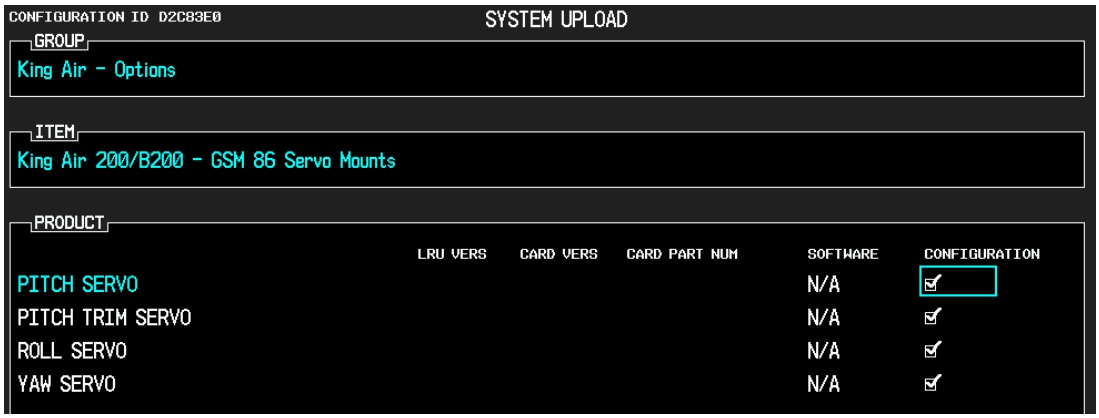


Figure 3-37, GSM 86 Servo Mount Configuration

7. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for PITCH SERVO, PITCH TRIM SERVO, ROLL SERVO and/or YAW SERVO (as selected).
   - "Upload Complete……COMPLETE" in the summary box.
8. Press **ENT** key on PFD1 to acknowledge upload complete.
9. Deactivate cursor.
10. Verify the servo mount configuration per section 3.27.

3.27 Verification of Servo Mount Configuration

For software versions 0985.04 and later, the section 4.9.1 slip clutch torque check procedure requires the correct type of GSM servo gearbox to be configured. The following procedure verifies the type of servo gearbox that is configured for each servo.

1. With PFD1 in configuration mode, use the large FMS knob on PFD1 to select the GDU page, then select "**AIRFRAME CONFIGURATION**" using the small FMS knob.
2. Activate cursor and rotate the large FMS knob to scroll to the last entries in the **AIRFRAME** field.
3. Verify the correct type of GSM servo gearbox (GSM 85A or GSM 86) is installed for each servo.

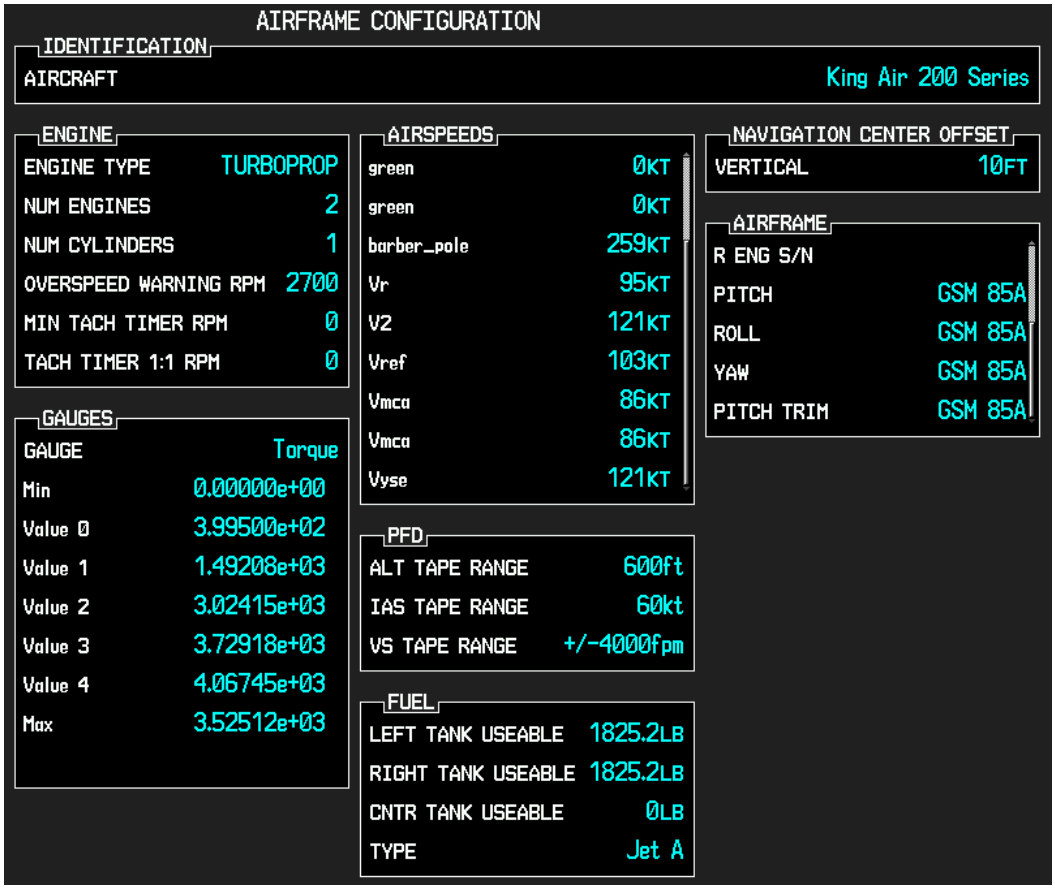


Figure 3-38, Servo Mount Configuration Verification

4. Deactivate cursor.

If any of the servo gearboxes shown do not match the actual installation on the aircraft, reload the correct servo gearbox configuration per section 3.25 or 3.26 as applicable.

3.28 FliteCharts Configuration

If ChartView has previously been enabled, and is no longer desired, follow the procedures outlined in this section to return the G1000 system to the basic FliteChart functions. If ChartView has not been enabled, the following procedure is not required.

Loading of the baseline configuration for the specific airframe is required for enabling FliteChart functions. Reload the baseline configuration and all applicable options as described in Section 3.9. Reloading the baseline configuration disables all previously enabled options.

NOTE

The G1000 can only be configured for FliteCharts or ChartView but not both. Performing this procedure will automatically disable the ChartView function. Coordinate this configuration with section 7.16 "FliteChart Functional Checks".

3.29 ChartView Enable

Follow this procedure to activate the ChartView option. A ChartView Enable Card, as specified in 005-00421-03 "General Arrangement Drawing, King Air 200/B200" will be required for this procedure.

NOTE

The required ChartView databases are subscription-based and are to be procured by the installing agency directly from Jeppesen.

NOTE

The G1000 can only be configured for FliteCharts or ChartView but not both. Performing this procedure will automatically disable the FliteChart option. Coordinate this configuration with section 7.17 "ChartView Functional Checks".

1. With the ChartView Enable card in the top slot of PFD1 and PFD1 in configuration mode, select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight "**Configuration Files**" and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**Enable ChartView**". Press **ENT** key on PFD1.
4. Verify "**Enable ChartView**" is displayed in the "Item" window. Press "**LOAD**".

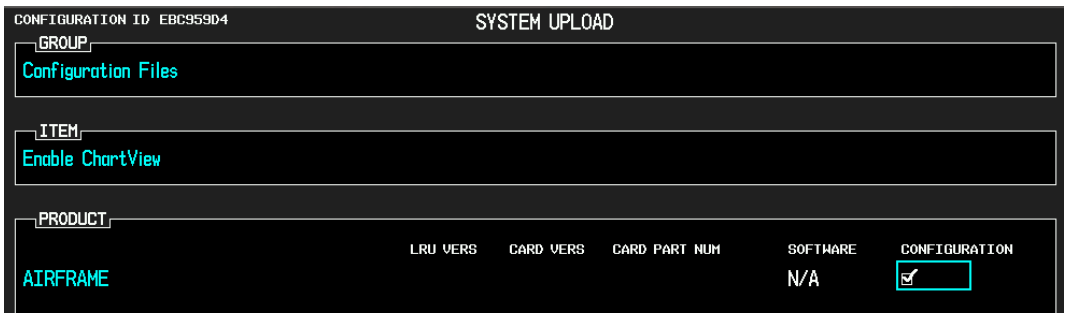


Figure 3-39, ChartView Enable

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for AIRFRAME.
   - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.

7. De-activate the cursor.
8. Power down the system and remove the ChartView Enable card from PFD1.

3.30 TAWS-B Enable

Follow this procedure to enable the TAWS Class B function. A TAWS-B Enable Card, as specified on General Arrangement Drawing 005-00421-03, will be required for this procedure.

1. With the TAWS-B Enable card in the top slot of PFD1 and PFD1 in configuration mode, select the "SYSTEM UPLOAD" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight "**Configuration Files**" and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**Enable TAWS**". Press **ENT** key on PFD1.
4. Verify "**Enable TAWS**" is displayed in the "Item" window. Press "**LOAD**".

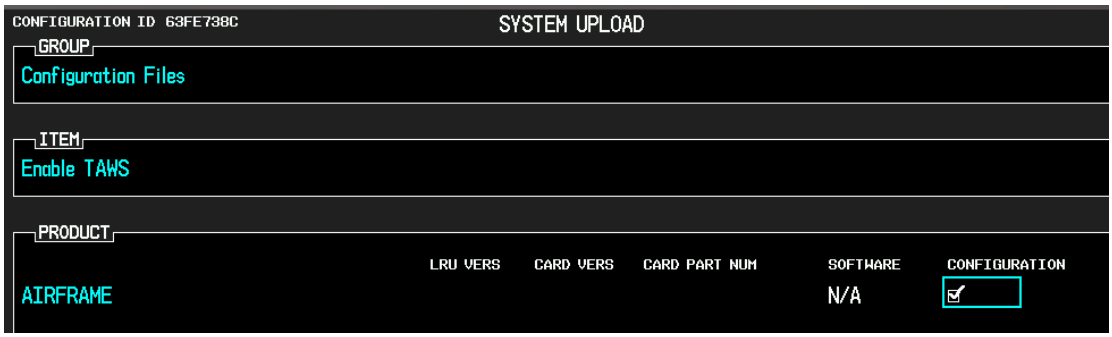


Figure 3-40, TAWS-B Enable

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for AIRFRAME.
   - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. De-activate the cursor.
8. Power down the system and remove the TAWS-B Enable Card from PFD1.

3.31 TAWS-A Enable

Follow this procedure to enable the TAWS Class A function. A TAWS-A Enable Card, as specified on General Arrangement Drawing 005-00421-03, will be required for this procedure.

NOTE

Ensure that the TAWS-A Support Configuration has been loaded per Section 3.10.
Ensure that the RAD ALT Option Configuration has been loaded per Section 3.15.

1. With the TAWS-A Enable card in the top slot of PFD1 and PFD1 in configuration mode, select the "SYSTEM UPLOAD" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight "**Configuration Files**" and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**Enable TAWS-A**". Press **ENT** key on PFD1.
4. Verify "**Enable TAWS-A**" is displayed in the "Item" window. Press "**LOAD**".

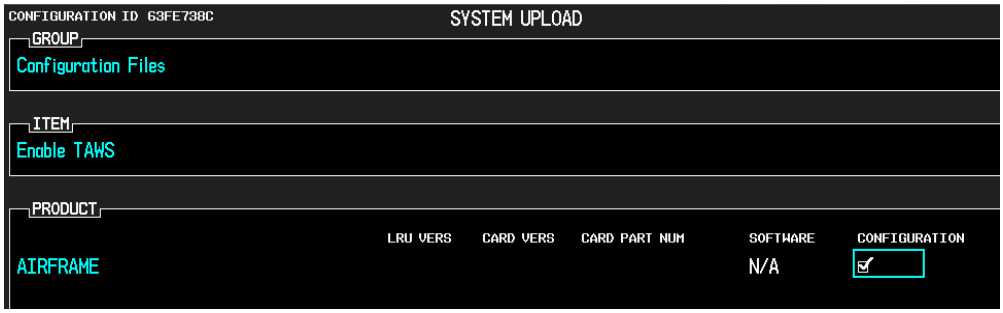


Figure 3-41, TAWS-A Enable

9. Monitor load progress. Verify software load completes without errors as indicated by the following:
5. Green "PASS" in Configuration column Verify software load completes without errors as indicated by the following:
    - Green "PASS" in Configuration column for AIRFRAME.
    - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. De-activate the cursor.
8. Power down the system and remove the TAWS-A Enable Card from PFD1.

3.32 Supplemental Database Loading

1. Open PFD1, PFD2 and MFD circuit breakers.
2. Remove the SD card containing the supplemental databases from the *lower* slot of the MFD. Supplemental databases include basemap, Safetaxi, airport terrain, obstacle, airport directory and terrain databases.
3. Download the current supplemental databases to the SD card.
4. Reinsert the SD card containing the current supplemental databases into the *lower* slot of the MFD.
5. Close PFD1, PFD2 and MFD circuit breakers.
6. The system will synchronize the data to the PFDs as necessary (FliteCharts and ChartView are located only on the MFD and do not require synchronization.) Monitor the synchronization process on the AUX – SYSTEM STATUS page in the SYNC STATUS sub-section within the DATABASE window This sub-section is only present when a sync is occurring or has occurred on the current power cycle.

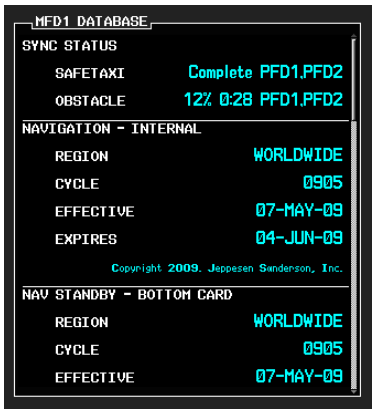


Figure 3-42, Supplemental Database Synchronization

7. If an error occurs during synchronization, one of the following messages will be displayed followed by the affected GDU:

   Err No Space – SD card does not contain sufficient memory
   Timeout – system timed-out prior to the database transfer completing
   Canceled – an active synchronization has been cancelled due to the **SYNC DBS** softkey being unpressed
   Err – displayed for all other errors

   Note that a power cycle is required to restart synchronization when 'Err No Space' or 'Err' is shown.
8. When the synchronization is complete, the status is shown as 'Complete'.
9. Cycle power to PFD1, PFD2 and MFD.
10. The supplemental databases in PFD1, PFD2 and MFD are now updated.
11. On the AUX – SYSTEM STATUS page, press the **MFD1 DB** softkey. Scroll through all of the databases contained in the MFD and confirm that the correct databases are loaded.
12. Press the **MFD1 DB** softkey again to toggle to **PFD1 DB**. Scroll through all of the databases contained in the PFD1 and confirm that the correct databases are loaded.
13. Press the **PFD1 DB** softkey again to toggle to **PFD2 DB**. Scroll through all of the databases contained in the PFD2 and confirm that the correct databases are loaded.

3.33 SVS/Pathways Enable

Follow this procedure to enable the Synthetic Vision option. An SVS/Pathways Enable Card, as specified on General Arrangement Drawing 005-00421-03, will be required for this procedure.

NOTE

The Garmin Synthetic Vision and Pathways feature requires 9 arc-second high resolution terrain databases to function. Each G1000 display must be equipped with the Terrain/Obstacle/SafeTaxi database card installed in the lower slot.

NOTE

When the SVS/Pathways option is enabled for the first time the G1000 writes its unique system ID to the physical card and locks the files to this unique ID. This prevents the SVS/Pathways unlock card from ever being used to activate the SVS/Pathway feature in other G1000 systems.

The unlock card is tied to the specific aircraft in which it was used for the first time. This card MUST be kept with the aircraft for situations where SVS/Pathways must be re-activated.

1. With the SVS Enable card in the top slot of PFD1 and PFD1 in configuration mode, select the "SYSTEM UPLOAD" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight "**Configuration Files**" and press **ENT** key on PFD1.
3. Rotate the small FMS knob to highlight "**Enable SVS Dual PFD**". Press **ENT** key on PFD1.
4. Verify "**Enable SVS Dual PFD**" is displayed in the "Item" window. Press "**LOAD**".

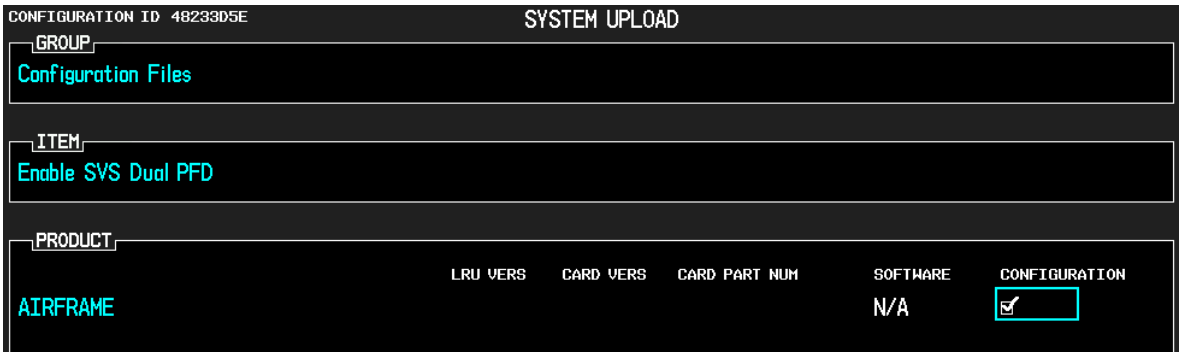


Figure 3-43, SVS Enable

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for AIRFRAME.
   - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. De-activate the cursor.
8. Power down the system and remove the SVS Enable card from PFD1.

3.34 ESP Enable

Follow this procedure to enable the Electronic Stability and Protection (ESP) function. An Enhanced AFCS Unlock Card, as specified on General Arrangement Drawing 005-00421-03, will be required for this procedure.

NOTE

The G1000 has various features that require the use of unlock/enable cards to activate the feature. Throughout this document these cards are generically referred to as 'enable cards'. In some cases, the actual label on the physical card may say 'unlock'. If uncertain, the technician should verify the card part number prior to use.

Ensure that the ESP Support Configuration has been loaded per Section 3.20 or 3.21.

1. With the Enhanced AFCS Unlock card in the top slot of PFD1 and PFD1 in configuration mode, select the "SYSTEM UPLOAD" page using the small FMS knob on PFD1.
2. Activate cursor and rotate the small FMS knob to display drop down menu. Highlight "**Enhanced AFCS**" and press **ENT** key on PFD1.
3. Rotate the small FMS knob to select "**Enable Enhanced AFCS**". Press **ENT** key on PFD1.
4. Verify "**Enable Enhanced AFCS**" is displayed in the "Item" window. Press "**LOAD**".

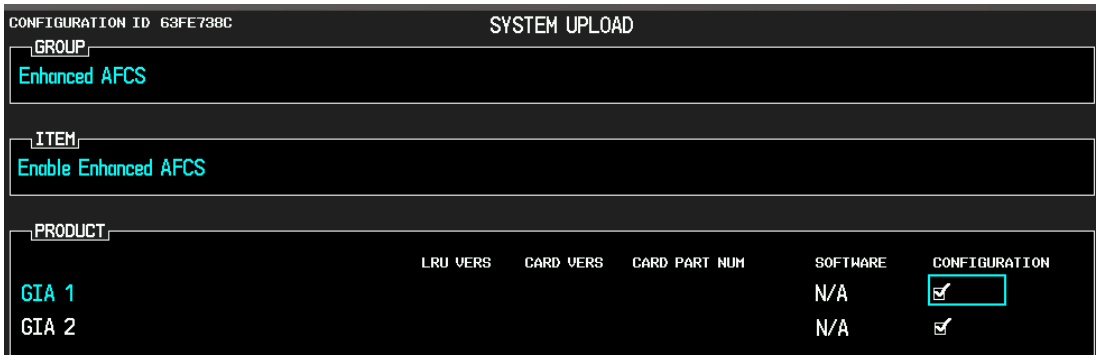


Figure 3-44, ESP Enable

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in Configuration column for GIA1 and GIA2.
   - "Upload Complete…….COMPLETE" in the summary box.
6. Press **ENT** key on PFD1 to acknowledge upload complete.
7. De-activate the cursor.
8. Power down the system and remove the Enhanced AFCS Unlock Card from PFD1.

3.35 Aircraft Registration Number Entry

1. If not applied, apply power to the G1000 system.
2. With PFD1 in configuration mode, select the GTX page group, then select the **TRANSPONDER CONFIGURATION** page.
3. The '**ADDRESS TYPE**' default is '**US TAIL**'. To enter a non-US Mode-S registration number set the '**ADDRESS TYPE**' field to '**HEX ID**'.
4. Activate the cursor and highlight the '**MODE S ADDRESS**' field. Use the small/large FMS knobs to enter the US aircraft registration number or other Mode-S registration number.

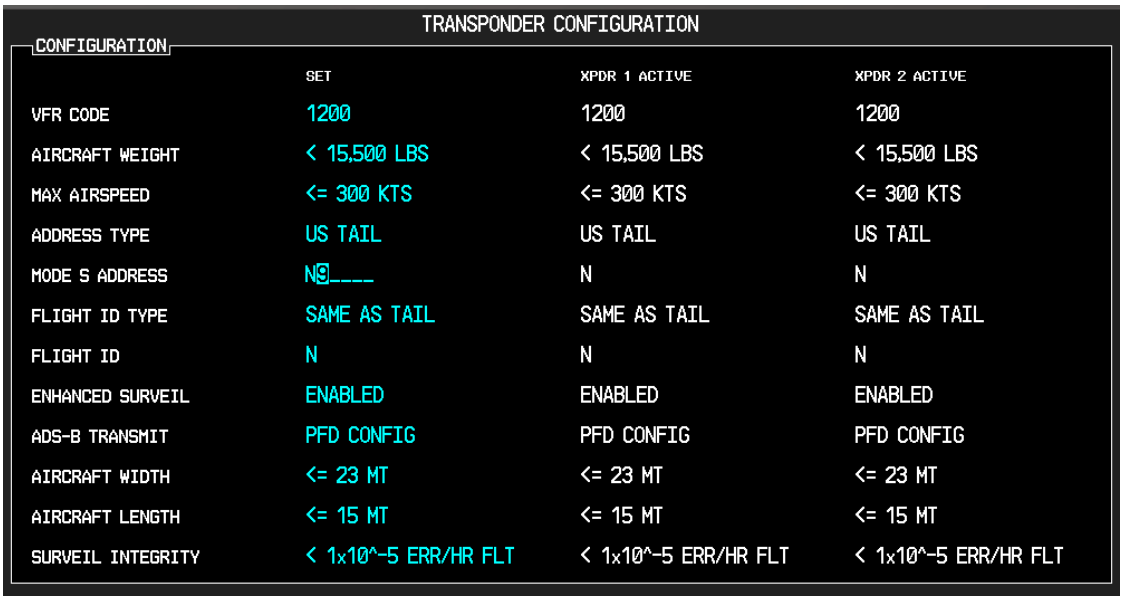


Figure 3-45, Aircraft Registration

5. For US registered aircraft, the '**FLIGHT ID TYPE**' field should be set to '**SAME AS TAIL**'. For other aircraft, the '**FLIGHT ID TYPE**' field should be set to '**CONFIG ENTRY**' or '**PFD ENTRY**'.

NOTE

The CONFIG ENTRY setting requires the Aircraft Registration/ID number to be entered once in the '**FLIGHT ID**' field. The PFD ENTRY setting allows the pilot to enter the Aircraft Registration/ID number from the PFD, via the '**TMR/REF**' softkey.

6. After each configuration setting change, press the **ENT** key to configure the transponders.
7. Press the **ENT** key on PFD1 to acknowledge prompt.
8. After completing transponder configuration, deactivate the cursor.

3.36 Splash Screen Loading

When all software and configuration has been loaded, the splash screens must be loaded to all display units (PFD1, PFD2 and MFD).

1. If not applied, apply power to the G1000 system.
2. Remove power from PFD1, PFD2 and MFD by opening the PFD1 PRI/SEC, PFD2 and MFD circuit breakers.
3. Insert the software loader card in the upper slot of PFD2.
4. Apply power to PFD2.
5. When prompted to update system files, press the NO softkey.
6. When prompted to update splash screen files, press the YES softkey.
7. Remove the loader card from PFD2 and insert it into the upper slot of the MFD.
8. Apply power to the MFD and repeat steps 5 and 6.
9. Remove the loader card from the MFD and insert it into the upper slot of PFD1.
10. Apply power to PFD1 and repeat steps 5 and 6.
11. Cycle power to the MFD and splash screen will be present.

NOTE

Any time software and/or configuration is loaded to the system, the splash screens will need to be reloaded to all three display units.

3.37 Navigation Database Loading

A new navigation database cycle may be loaded before it is effective. The new database will be stored on the G1000 bottom SD card until it becomes effective. The G1000 will automatically update to use the new database at the first on-ground power-on after its effectivity date.

Follow this procedure to load the navigation database:

1. Remove power from the PFD1, PFD2 and MFD.
2. Insert an SD card containing the latest cycle Jeppesen navigation database (data supplied by Jeppesen) into the top slot of the MFD.
3. Apply power to the PFD1, PFD2 and MFD. A prompt similar to the following will be displayed on the MFD:

```
DO YOU WANT TO UPDATE THE STANDBY NAVIGATION DATABASE ON THE BOTTOM CARD?
THE STANDBY DATABASE WILL BE ACTIVATED UPON THE FIRST ON-GROUND POWER CYCLE ON OR
AFTER 00:00 SYSTEM TIME ON THE EFFECTIVE DATE.
            FROM            TO
REGION:     WORLDWIDE       WORLDWIDE
CYCLE:      0904            0905
EFFECTIVE:  09-APR-2009     07-MAY-2009
EXPIRES:    07-MAY-2009     04-JUN-2009
```

4. Select the **YES** softkey to confirm the standby navigation database update.
5. After the database is updated, a prompt similar to the following will be displayed on the MFD:

```
.
DO YOU WANT TO UPDATE THE ACTIVE NAVIGATION DATABASE?
SELECTING YES WILL OVERWRITE THE ACTIVE NAVIGATION DATABASE.
            FROM            TO
REGION:     WORLDWIDE       WORLDWIDE
CYCLE:      0904            0905
EFFECTIVE:  09-APR-2009     07-MAY-2009
EXPIRES:    07-MAY-2009     04-JUN-2009
```

6. Select the **NO** softkey to allow the system to use the database when it becomes effective.

NOTE

If the new database is not yet effective but it is desired to use the new database immediately, select the **YES** softkey. To eliminate database mismatch errors when selecting the **YES** softkey, the database must also be loaded on PFD1 and PFD2 individually following the same process.

7. The system will synchronize and automatically update as necessary. Monitor the synchronization process on the AUX – SYSTEM STATUS page in the SYNC STATUS sub-section within the DATABASE window This sub-section is only present when a sync is occurring or has occurred on the current power cycle.

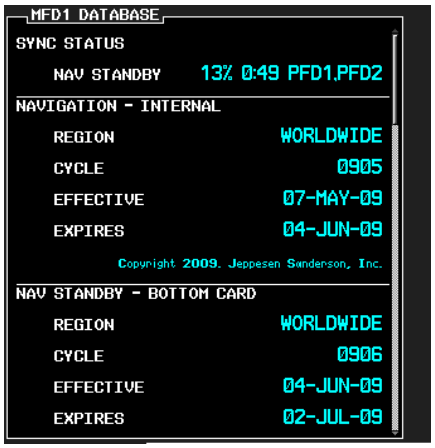


Figure 3-46, Navigation Database Synchronization

8. If an error occurs during synchronization, one of the following messages will be displayed followed by the affected GDU:

   Err No Space – SD card does not contain sufficient memory
   Timeout – system timed-out prior to the database transfer completing
   Err – displayed for all other errors

   Note that a power cycle is required to restart synchronization when 'Err No Space' or 'Err' is shown.
9. When the synchronization is complete, the status is shown as 'Complete'.
10. Cycle power to PFD1, PFD2 and MFD by resetting the PFD1 PRI, PFD1 SEC, PFD2 and MFD circuit breakers.
11. The standby navigation databases in PFD1, PFD2 and MFD are now updated.
12. On the AUX – SYSTEM STATUS page, press the **MFD1 DB** softkey. Scroll through all of the databases contained in the MFD and confirm that the correct databases are loaded.
13. Press the **MFD1 DB** softkey again to toggle to **PFD1 DB**. Scroll through all of the databases contained in the PFD1 and confirm that the correct databases are loaded.
14. Press the **PFD1 DB** softkey again to toggle to **PFD2 DB**. Scroll through all of the databases contained in the PFD2 and confirm that the correct databases are loaded.

3.38 Configuration of Navigation Map for Traffic System

1. With the MFD in normal mode, use the GCU FMS knob to select the Navigation Map page then press GCU MENU key to display the PAGE MENU.
2. Turn the small right knob to select or verify selected 'Map Setup' and press the ENT key and verify TRAFFIC is selected ON.
3. Verify the flashing cursor highlights the GROUP field.
4. Turn the GCU small FMS knob to select Traffic and press ENT on GCU.
5. If not already selected, use the GCU FMS knob to make the following selections:
   - TRAFFIC MODE – ALL TRAFFIC
   - TRAFFIC SMBL – 300NM
   - TRAFFIC LBL – 300NM
6. Return to the Map Page by pressing the GCU FMS knob or momentarily pressing and holding the CLR key. Deactivate cursor.

3.39 Clearing Default User Settings

1. Remove power from PFD1, PFD2 and MFD by pulling the PFD1 PRI, PFD1 SEC, PFD2 and MFD circuit breakers.
2. While holding the **CLR** button on PFD1, reset PFD1 PRI and PFD1 SEC circuit breakers.
3. While holding the **CLR** button on PFD 2, reset the PFD2 circuit breaker.
4. While holding the second key from the right side of the MFD (beginning on the right side of the MFD, count 2 keys to the left), reset the MFD circuit breaker.
5. When prompted to clear user settings, select the YES softkey on each unit.

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4 Instructions for Continued Airworthiness

4.1 Airworthiness Limitations

The G1000 Integrated Flight Deck including the GFC 700 AFCS is airworthy when installed, configured, and maintained in accordance with this section.

The G1000 and GFC 700 systems possess the following maintenance airworthiness limitations: The intervals for the airworthiness limitations are shown in maximum number of hours between checks, as required for certification. Table 4-1 aligns these requirements with the King Air Phase Inspection Program. These limitations were derived from the certification data.

GFC 700 Limitations:

- Every 220 hours, perform a Trim Annunciator Check per Section 4.12.
- For installations with the GSM 85A Servo Gearbox, every 420 hours, perform a GSM 85A Slip Clutch Torque Check per Section 4.9.
- For installations with the GSM 86 Servo Gearbox, every 3,000 hours, perform a GSM 86 Slip Clutch Torque Check per Section 4.9.

G1000 Limitations:

- Every 220 hours, perform a Weight on Wheels and Low Speed Awareness Band Check per Section 7.22.
- Every 220 hours, perform a G1000 Redundant Connection Check per Section 4.10.
- Every 220 hours, perform a G1000 Cooling Fan Fail Annunciation Check per Section 8.1.4.
- Every 620 hours, perform a Power Bus Feeder Check per Section 4.17.1.
- Every 820 hours, perform a Nose Avionics Compartment Fans Operational Check per Section 4.14.
- Every 820 hours, perform an Instrument Panel Fans Operational Check per Section 4.15.
- Every 820 hours, perform an Engine Data Check (GIA 1 or GIA 2 Inoperative) per Section 4.11.
- Every 820 hours, perform the G1000 Miscompare Checks per Section 4.13.
- At 10,000 cycles and every 1,000 cycles thereafter, perform an exterior skin inspection around antennas for cracks per the King Air 200 Series Maintenance Manual, section 53-10-00, chart 201.

Other Limitations:

- Every 220 hours, perform the Standby Instrument Electrical Power Checks per Section 8.1.5.
- Every 220 hours or 6 Calendar Months (whichever occurs first), perform Standby Battery Charge Check per Section 4.16.1.

There are no other airworthiness limitations associated with this type design change (STC SA01535WI-D). The G1000/GFC 700 King Air 200/B200 Airplane Flight Manual Supplement defines all operating limitations for this STC.

The Airworthiness Limitations section is FAA-approved and specifies maintenance required under §§ 43.16 and 91.403 of Title 14 of the Code of Federal Regulations, unless an alternative program has been FAA-approved.

FAA APPROVED

Robert Murray
STC Unit Administrator
ODA-240087-CE

8/8/2012
Date

4.2 Servicing Information

G1000 LRU maintenance is 'on condition' only. No component-level overhaul is required for this type design change.

4.2.1 On Condition Servicing

'On Condition' replacement and/or servicing should occur when an item exhibits conditions, symptoms, and/or abnormalities defined in Section 5 of this manual. Replacement and/or servicing should be made only after the technician troubleshoots the system to the extent determined necessary by using the guidance in this manual along with common avionics maintenance practices.

IMPORTANT!

It is impossible to provide guidance for every conceivable failure scenario within the scope of this manual. Every effort has been made to provide comprehensive guidance for possible failures. The information in this document should always be combined with common sense and a thorough knowledge of the system. Use sound avionics maintenance practices when working around or on G1000 equipment.

The remainder of this document is organized in the following fashion:

- Section 4.3 lists maintenance requirements related to the G1000 system.
- Section 6 gives instructions regarding the removal and replacement of physical G1000 equipment and parts.
- Section 7 gives configuration and testing instructions to be accomplished if G1000 equipment or parts are removed or replaced.
- Section 8 specifies system return-to-service procedures.

The beginning of Section 6 provides instructions to check the software part number and version of each LRU before removing a unit. Procedures in Section 7 require the same check after LRU replacement and software loading.

IMPORTANT!

All structural repairs associated with this installation are to be addressed in accordance with the Hawker Beechcraft Structural Inspection and Repair Manual listed in Table 1-2.

4.2.2 Required Tools

The following tools are needed to perform maintenance tasks on G1000 equipment:

- Calibrated Milli-ohm meter, OR
- Agilent 34410A Ammeter or equivalent
- Fluke 187 Voltmeter or equivalent
- Variable DC Power Supply capable of providing 1 amp current
- #2 Non-Magnetic Phillips Screwdriver
- 3/32" Hex tool
- Calibrated digital level (Required for AHRS 'Procedure A' Calibration)
- Calibrated VHF NAV/COM/ILS ramp tester or equivalent
- Calibrated transponder ramp tester or equivalent
- Calibrated pitot/static ramp tester
- Outdoor line-of-site to GPS satellite signals or GPS indoor repeater
- Headset/microphone
- Ground Power Unit (Capable of supplying 28 Vdc)
- Calibrated Flight Control Cable Tension Meter or equivalent
- GSM 85A Servo Gearbox Slip Clutch Adjustment Tool – Garmin P/N T10-00110-01 and a 2 Amp, 24 V, DC Power Supply
- Calibrated torque wrench capable of measuring 0 – 70 in/lbs
- Standard sockets & wrenches (3/8", 9/16", and 13/16")
- Calibrated digital thermometer suitable for measuring ambient temperature
- Laptop with RS232 emulation software
- M22885/108T8234 extraction tool
- An 0.060" 6-Spline wrench
- WX-PA portable analyzer kit (If Stormscope is installed)
- Lift Computer Breakout Box – P/N SK100360 or equivalent (if ESP with AOA option is installed)
- Lift Transducer Force Applicator Kit – Safe Flight P/N 1952-1-3-5 (if ESP with AOAoption is installed)
- Gauging Equipment Tool SPF-4 (A1M-BCH-GE) *

* The gauging equipment tool is used for the static port inspection for RVSM compliant aircraft only. This tool is available from Hawker Beechcraft. Any alternate tool authorized in the King Air 200 Series Maintenance Manual for RVSM static port measurements may be substituted for this tool. Refer to Chapter 34-10-00 of the King Air 200 Series Maintenance Manual for more details.

4.3 Maintenance Intervals

Table 4-1 shows systems and items, installed by this STC, which must undergo tests or checks at specific intervals. If the interval is shown to be in flight time as well as calendar months, the first interval reached should be used as the limit.

The inspection time tables used for this STC are aligned with the existing maintenance 200 hr phase inspection program used in the current King Air 200 Series Maintenance Manual. A complete inspection cycle for the King Air 200/B200 is 800 hours or 24 calendar months, divided into the following four phases:

Inspection Phase 1: To be performed at 200 hours and every 800 hours thereafter.

Inspection Phase 2: To be performed at 400 hours and every 800 hours thereafter.

Inspection Phase 3: To be performed at 600 hours and every 800 hours thereafter.

Inspection Phase 4: To be performed at 800 hours and every 800 hours thereafter.

Those inspections that are based on flight time, calendar elapsed time or cycles shall have specific intervals stated in Table 4-1.

IMPORTANT!

As allowed in the King Air 200 Series Maintenance Manual, a tolerance of +/- 20 hours for all phase inspections.

Special Inspection Items - Calendar limited inspections have a tolerance of ± 12 days per 12 calendar months.

The intention of Garmin is to align this maintenance program as best possible with the existing King Air 200/B200 inspection program. For a complete description of the King Air inspection program, refer to the King Air 200 Series Maintenance Manual listed in Table 1-2.

Table 4-1, Maintenance Intervals

Item	Description/Procedure	Manual Section No.	Interval
G1000/GFC700 Equipment			
G1000/GFC700 System Visual Inspections	Complete Visual Inspection of GWX 68 Equipment and Wiring located in Nose Section	4.4	Phase 4
	Complete Visual Inspection of G1000/GFC700 Equipment and Wiring located in Nose Avionics Compartment	4.4	Phase 4
	Complete Visual Inspection of G1000/GFC700 Equipment and Wiring located in Pilot's Compartment	4.4	Phase 3
	Complete Visual Inspection of G1000/GFC700 Equipment and Wiring located on and behind Instrument Panel	4.4	Phase 3
	Complete Visual Inspection of G1000/GFC700 Equipment and Wiring located in Cabin	4.4	Phase 3
	Complete Visual Inspection of G1000/GFC700 Equipment and Wiring located in Rear Fuselage and Empennage	4.4	Phase 4

Item	Description/Procedure	Manual Section No.	Interval
GFC700 Periodic Check	Verify proper operation of the GFC700 by performing the following: Pre-Flight Test AFCS Switch Checks Autopilot Operation Checks For installations with the GSM 86 servo gearbox: Autopilot Clutch Overpower Check	8.2.1, 8.2.2, 8.2.5 8.2.3	Phase 2 and 4
TAWS Functional Check	Periodic TAWS function check	7.15	Phase 4
GDU 1040A PFD (Qty 2)	Removal & Replacement	6.1	On Condition
GDU 1500 MFD	Removal & Replacement	6.1	On Condition
GMA 1347D (Qty 2)	Removal & Replacement	6.2	On Condition
	GMA 1347D Test	7.2.1	Phase 2 and 4
	Landing Gear Aural Alert Check	7.2.2	Phase 2 and 4
	XM Audio Suppression Check	7.2.3	Phase 2 and 4
GIA 63W IAU (Qty 2)	Removal & Replacement	6.3	On Condition
GEA 71 EAU (Qty 2)		6.4	
GTX 33( ) Transponder (Qty 2)	Removal & Replacement	6.5	On Condition
	Special Inspection - Perform GTX 33( ) test.	7.5.2	24 Calendar Months
GDC 74B (Qty 2)	Removal & Replacement	6.6	On Condition
	Special Inspection – Perform Air Data Test.	7.6.1	24 Calendar Months
RVSM checks	Special inspection – for RVSM compliant aircraft only NOTE: These checks required for initial RVSM compliance. These checks also required when: • a static port is removed/installed • the RVSM critical region is repaired or painted	7.23	24 Calendar Months, On Condition (see note)
GRS 77 AHRS (Qty 2)	Removal & Replacement	2	On Condition
	Magnetic variation database update.	4.6	
GMU 44 Magnetometer (Qty 2)	Removal & Replacement	6.9	
GDL 69A		6.10	
GWX 68		6.15	
GMC 710		6.14	
GCU 477		6.13	
GTS 8XX Traffic Unit		6.30	
GPA 65 PA/LNA Unit		6.31	

Item	Description/Procedure	Manual Section No.	Interval
GDL 59 Wi-Fi Datalink	Removal & Replacement	6.33	On Condition
GSR 56 Satellite Receiver		6.30	
G1000 Cooling Fan Fail Annunciation Check*	**Verify the operation of the fan power and fan speed monitoring circuits for GIA1 Fan, GIA2 fan, PFD1 fan, MFD fan and PFD2 fan and fan fail messages**	**8.1.4**	**Phase 1, 2, 3 & 4**
Nose Avionics Compartment Fans Operational Check*	**Functional test of the GIA1 and GIA2 ported fans. Verify airflow from all fan ports**	**4.14**	**Phase 4**
Instrument Panel Fans Operational Check*	**Functional test of the PFD1, MFD and PFD2 cooling fans. Verify airflow from each fan**	**4.15**	**Phase 3**
G1000 Redundant Connection Check*	**Verify PRI and SEC power sources for PFD 1, GIA 1, GRS 1, GDC 1** **Verify secondary paths for AHRS, ADC, engine parameters and GPS data** **Verify the operation of PFD and MFD Ethernet connections** **Verify ARINC connection between ADC1 and MFD and between GRS1 and MFD** **Verify DISPLAY BACKUP button function**	**4.10**	**Phase 1, 2, 3 & 4**
Engine Data Check (GIA 1 or 2 Inoperative)*	**Verify engine data is available and accurate with GIA 1 or GIA 2 inoperative**	**4.11**	**Phase 4**
Trim Annunciator Check*	**Verify trim annunciators function properly**	**4.12**	**Phase 1, 2, 3 & 4**
G1000 Miscompare Check*	**Verify AHRS, airspeed and altitude miscompare monitors function properly**	**4.13**	**Phase 4**
Power Bus Feeder Check*	**Verify availability of power bus feeders (essential bus, No.1 dual feed bus, No. 2 dual feed bus)**	**4.17.1**	**Phase 2 and 4**
Dual Bus-Feeder Diodes Check	Inspection of dual bus feeder diodes	4.17.2	Phase 3
G1000 Alerts	Check for and troubleshoot any alerts provided in the alert window per the referenced manual section	5	On Condition
GPS/WAAS Antennas	Removal & Replacement Refer to Master Drawing List, listed in Table 1-2, for installation drawings.	6.18	On Condition
Diversity Transponder Antenna		6.19	On Condition
Iridium antenna		6.20	On Condition
Wi-Fi Antenna		6.21	On Condition
GA 58 Traffic Antennas		6.32	On Condition
Flaps-in-motion Discrete Input Check	Test the Flaps-in-motion discrete inputs to the G1000 to verify proper operation.	4.8	Phase 1, 2, 3 & 4

*** Denotes Airworthiness Limitation Maintenance Requirement (See Section 4.1)**

Item	Description/Procedure	Manual Section No.	Interval
GSA 80 Servos (all)	Removal & Replacement. Refer to Master Drawing List, listed in Table 1-2, for installation drawings.	6.11	On Condition
GSM 85A /86 Servo Gear Box (all)	Removal & Replacement. Refer to the servo install drawings listed in Master Drawing List, listed in Table 1-2.	6.12	On Condition
GSM 86 Servo Gear Box Slip Clutch Torque Check *	**For installations with the GSM 86 servo gearbox, verify that the pitch, roll, yaw and pitch trim GSM 86 slip clutch torque values are within acceptable limits**	**4.9**	**Special** **3,000 hrs**
GSM 85A Servo Gear Box Slip Clutch Torque Check *	**For installations with the GSM 85A servo gearbox, verify that the pitch, roll, yaw and pitch trim GSM 85A slip clutch torque values are within acceptable limits**	**4.9**	**Phase 2 & 4**
WOW and Low Speed Awareness Band Check*	**Verify the integrity of the wiring interface between the landing gear safety switch assembly and the No. 1 and No. 2 GIA inputs and the air ground status logic.**	**7.22**	**Phase 1, 2, 3 & 4**
Exterior skin inspection around antennas*	**Inspect the exterior skin around antennas for cracks and loose and missing fasteners per Super King Air 200 Series Maintenance Manual, section 53-10-00, chart 201.**	**NA**	**Special** **10,000 cycles (initial)** **1,000 cycles (repeat)**
G1000 Accessories			
Configuration Module Replacement (Qty 7)	Removal & Replacement.	6.16	On Condition
GEA 71 Backshell Thermocouple (Qty 2)	Removal & Replacement.	6.17	
GTP 59 OAT Probe (Qty 2)	Removal & Replacement.	6.7	
PFD, MFD, and GIA Cooling Fans (Qty 5)	Removal & Replacement Refer to Master Drawing List, listed in Table 1-2, for installation drawings.	N/A	
G1000 Lightning Protection			
Electrical Bonding Test	Perform the Phase 3 electrical bonding resistance check of G1000 equipment	4.5.3	Phase 3
	Perform the Phase 4 electrical bonding resistance check of G1000 equipment	4.5.4	Phase 4
Lightning Strike to GTP 59 OAT Probe or Antenna Actual or Suspected	Inspect the antenna/probe and surrounding installation per Table 4-9.	4.4	On Condition

*** Denotes Airworthiness Limitation Maintenance Requirement (See Section 4.1)**

Item	Description/Procedure	Manual Section No.	Interval
Engine/Airframe Sensors			
ITT Thermocouple Cable (Qty 2)	Removal & Replacement: Refer to King Air 200 Series Maintenance Manual listed in Table 1-2.	N/A	On Condition
Oil Pressure Sensor (Qty 2)			
Oil Temperature Sensor (Qty 2)			
Torque Transmitter (Qty 2)			
Fuel Flow Transmitter (Qty 2)			
Prop Tachometer (Qty 2)			
Engine Speed Tachometer (Qty 2)			
signal conditioner (Qty 2)	Removal & Replacement	6.22	On Condition
Annunciator/Switch – Prop Sync		6.23	
Other Equipment			
Standby Airspeed Indicator	Removal & Replacement	6.25	On Condition
	Static pressure system test according to 14 CFR 91.411 and Part 43 Appendix E.	N/A	24 Calendar Months
Standby Altimeter	Removal & Replacement	6.26	On Condition
	Test according to 14 CFR 91.411 and Part 43 Appendix E.	N/A	24 Calendar Months
Standby Attitude Indicator	Removal & Replacement	6.27	On Condition
L-3 PS-835(C or D) Standby Battery	Removal & Replacement	6.24	On Condition
	Capacity test of standby battery.	4.16.2	12 Calendar Months
Standby Battery Charge Check*	**Verify the standby battery is being charged.**	**4.16.1**	**Phase 1, 2, 3 & 4 or 6 Calendar Months**
Standby Instrument Electrical Power Checks*	**Verify STBY ATT & STBY ALT vibrator operate and STBY ATT, STBY ALT & STBY A/S illumination function on either aircraft power or standby battery power** **(standby compass checked during existing maintenance)**	**8.1.5**	**Phase 1, 2, 3 & 4**
Annunciator/Switch - Standby Battery	Removal & Replacement	6.23	On Condition

*** Denotes Airworthiness Limitation Maintenance Requirement (See Section 4.1)**

4.3.1 Discontinued Maintenance

Table 4-2 shows a list of inspections and tests that are listed in the King Air 200 Series Maintenance Manual, but may be no longer required post incorporation of this STC. It is the responsibility of the installer to ensure that there are no post factory installations that would require these checks to remain.

Table 4-2, Discontinued Maintenance Intervals

Item	Description/Procedure	Manual	Interval
AC Inverter	Operational Check	Phase Inspections	Phases 1, 2, 3 & 4
Dual Bus Feeder Diode	Inspection of Dual Bus Feeder Diodes	24-50-00	Phase 3 (superseded by 4.17.2)

IMPORTANT!

For installed equipment not listed in this maintenance manual, use the inspection procedures set forth in Chapter 05 of the King Air 200 Series Maintenance Manual, or other appropriate maintenance manual, as the requirements set forth by those manuals are still applicable. The requirements set forth by this document take precedence over those set forth by the King Air 200 Series Maintenance Manual, or other appropriate maintenance manual, in cases where the requirements conflict.

4.4 Visual Inspection

Perform a visual inspection in accordance with requirements in Table 4-1. Check for corrosion, damage, or other defects for each of the items listed in Table 4-3 through Table 4-8. Replace any damaged parts as required. Inspection may require the temporary removal of a unit or units to gain access to connectors. Follow guidance in Section 6 for equipment removal and replacement. Refer to the King Air 200 Series Maintenance Manual listed in Table 1-2 for instructions on removing any access panels.

NOTE

It is recommended that the Phase 3 and Phase 4 electrical bonding checks contained in section 4.5 are conducted after the Phase 3 and 4 visual inspections while access to these zones is still open.

Table 4-3, Nose Section Visual Inspection Procedure

Item	Description/Procedure	Initials
Gain access via the Radome for the following Inspection:		
GWX 68	a) Inspect the GWX 68 unit, mount, and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment. b) Inspect wire harness for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Nose Wire Harness Routing drawing, listed in Table 1-2.	

Table 4-4, Nose Avionics Compartment Visual Inspection Procedure

Item	Description/Procedure	Initials
Gain access via the Nose Equipment Compartment access panel for the following Inspection:		
GRS 77 (Qty 2)	a) Inspect the GRS 77 units, racks, and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
GIA 63W (Qty 2)	a) Inspect the GIA 63W units, racks, and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
Standby Battery	a) Inspect the standby battery, rack and connectors for corrosion, or other defaults. b) Inspect the standby battery fuses and associated bracket for corrosion or other defects.	
GIA Avionics Fan (Qty 2)	a) Inspect remote avionics fans and hoses for dirt accumulation and other damage. Remove excess dirt as required.	
GTS 8XX Traffic (option)	a) Inspect the GTS 8XX unit (if installed), rack and connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
LMD Rack and Modules	a) Inspect the LMD rack, modules, and terminations for corrosion or other defects.	
Nose Wiring harness	a) Inspect bulkhead connectors for security of attachment, corrosion or other defects. b) Inspect wire and coax for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Nose Wire Harness Routing drawing, listed in Table 1-2. . Pay particular attention to possible areas of chaffing such as the middle shelf feed-through hole, wheel well protrusion etc. c) Inspect Ground blocks for security of attachment, corrosion or other defects. d) Ensure all connectors are securely fastened.	

Table 4-5, Pilot's Compartment Visual Inspection Procedure

Item	Description/Procedure	Initials
Locate equipment in the aft pedestal for the following inspection.		
GCU 477	a) Inspect the GCU 477 unit and connector for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
ADF control unit (relocated by STC)	a) Inspect the ADF control unit and connector for corrosion or other defects. Check the integrity of the SHIELD ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
Pedestal Wiring	a) Inspect all visible wire harness for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Cabin Wire Harness Routing drawing, listed in Table 1-2.	
GTP 59 (Qty 2)	a) Inspect the GTP 59 units and connectors for corrosion or other defects. Check the integrity of the SHIELD ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment. b) Inspect wire harness for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Cabin Wire Harness Routing drawing, listed in Table 1-2.	
Placards	a) Inspect that all required placards are installed on the left and right control wheels. Placards must be legible, secure and in good condition. Refer to the Control Wheel Modification drawing listed in Table 1-2.	

Table 4-6, Instrument Panel G1000 Equipment Visual Inspection Procedure

Item	Description/Procedure	Initials
Gain access to behind the instrument panel by removing the PFDs and MFD (see below). Gain access to circuit breaker panels by removing the screws which fasten the edgelit overlays to the panels		
GDU 1040A PFD (Qty 2) & GDU 1500 MFD	a) Inspect the PFDs and MFD for any visual damage to the display screens or bezels including buttons and control knobs. b) Remove the MFD and PFDs as described in Section 6. c) Inspect the mounting surface, copper bonding fingers and connector for corrosion, heavy oxidation, or other damage. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment. d) Do not reinstall GDUs at this time. GDU cutouts provide access for visual inspections below.	
G1000 Wiring harness	a) Inspect all fwd bulkhead connectors for security of attachment b) Inspect all instrument panel wiring and coax for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Cabin Wire Harness Routing drawing, listed in Table 1-2. Pay particular attention to possible areas of chaffing. c) Inspect all other exposed G1000 / GFC wiring and coax for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Cabin Wire Harness Routing drawing, listed in Table 1-2. Pay particular attention to possible areas of chaffing.	
GDC 74B Air Data Computer (Qty 2)	a) Visually inspect each GDC 74B unit, mount, and connector for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment. b) Visually inspect the pitot/static plumbing and ensure it is secure and in good condition.	
GEA 71 Engine/ Airframe Unit (Qty 2)	a) Inspect the GEA 71 unit, rack, and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
GMA 1347D (Qty 2)	a) Inspect the GMA 1347D unit (including face of unit), rack and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to	

Item	Description/Procedure	Initials
	the harness connector assembly as well as the integrity of the individual shields and their attachment.	
PFD and MFD Fans (Qty 3)	a) Inspect fans for accumulation of dirt and other damage. Remove excess dirt as required.	
GDL 69A	a) Inspect the GDL 69A unit, rack, and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
GMC 710	a) Inspect the GMC 710 unit (including face of the unit), mount, and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
Signal Conditioner (Qty 2)	a) Inspect the signal conditioner unit, mount, and connectors for corrosion or other defects.	
Standby Attitude Indicator	a) Inspect the standby attitude indicator unit (including face of unit) and connector for corrosion or other defects. Check the integrity of the harness connector assembly in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraphs 11-96 and 11-100 and the Cabin Wire Harness Routing drawing, listed in Table 1-2.	
Standby Airspeed Indicator	a) Inspect the standby airspeed indicator unit (including face of unit) and connector for corrosion or other defects. b) Visually inspect the plumbing and harness connector assembly, and ensure it is secure and in good condition.	
Standby Altimeter	a) Inspect the standby altimeter indicator unit (including face of the unit) and connector for corrosion or other defects. b) Visually inspect the plumbing and harness connector assembly, and ensure it is secure and in good condition.	
Circuit Breaker Panels	a) Inspect circuit breaker panel wiring and circuit breakers for chafing, damage, other defects and proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96, the appropriate Circuit Breaker Panel Modification drawing, listed in Table 1-2, and the Cabin Wire Harness Routing drawing, listed in Table 1-2. Pay particular attention to possible areas of chaffing. b) Inspect edgelit overlay panels for damage or defect. c) Reinstall the circuit breaker edgelit overlays to the circuit breaker panels.	
Placards	a) Inspect that all required placards are installed. Placards must be legible, secure and in good condition. Refer to the Main Instrument Panel Installation drawing listed in Table 1-2.	
	Reinstall the MFD and PFDs as described in Section 6.	

Table 4-7, Cabin Area Visual Inspection Procedure

Item	Description/Procedure	Initials
Antennas	Inspect all external antennas for leading edge erosion and condition of base seals (GPS/WAAS, top diversity transponder(s), Iridium, top and bottom GA 58 traffic antennas, if installed)	
To gain access for the following Inspections, remove floorboards in cabin at FS 185.00 and FS 246.750		
Cabin Wiring Harness	a) Inspect all exposed wire harness for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Cabin Wire Harness Routing drawing, listed in Table 1-2.	
GTX 33 ( ) (Qty 2)	a) Inspect the GTX 33( ) units, shelf, brackets and connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
GDL 59 (wi-fi option only)	a) Inspect the GDL 59 unit (if installed), shelf, brackets and connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
GSR 56 (iridium option only)	a) Inspect the GSR 56 unit (if installed), shelf, brackets and connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
GFC 700 Equipment	a) Using a flashlight, inspect the roll servo, servo gearbox, connectors, support structure, and control cables to ensure that no corrosion, chaffing, cracks, or other defects exist. b) If GSM 86 servo gearbox is installed, check that the retaining bolt for the slip clutch cartridge is not damaged or loose. c) Have an assistant manually move the aileron control surfaces from stop to stop and visually observe the servo and control cabling/chain. Ensure there is no binding in the control cabling or chain, and that the capstan/sprocket rotates freely. d) Check the servo control cables in accordance with AC 43.13-1B, Chapter 7, Section 8, Paragraph 7-149 to ensure no fraying, corrosion, or other damage exists. If the condition of any cable is questionable, replace it with a new one. e) Check the tension on the control cables. Refer to the Roll Servo Install drawing, listed in Table 1-2, for cable tension specifications: f) Ensure that each cable is correctly attached to the clamps. g) Follow recommended checks for checking main control cables, following the instructions in Chapter 27, Flight Controls, of the King Air 200 Series Maintenance Manual. h) Reinstall the access panels if no other maintenance is to be performed.	
To gain access for the following inspection, remove the left cabin sidewall panel at FS 158		
GPA 65 (GTS 8XX traffic option only)	a) Inspect the GPA 65 PA/LNA unit (if installed), brackets and connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	

Table 4-8, Rear Fuselage and Empennage Visual Inspection Procedure

Item	Description/Procedure	Initials
Wi-fi Antenna	Inspect the external wi-fi antenna (if installed) for leading edge erosion and condition of base seals.	
To gain access for the following Inspections, refer to the servo installation drawings and the King Air 200 Series Maintenance Manual, listed in Table 1-2.		
Tail Wiring Harness	a) Inspect all exposed wire harness for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Tail Wire Harness Routing drawing, listed in Table 1-2. Pay particular attention to possible areas of chaffing. b) Verify security of aft bulkhead connectors	
GFC 700 Equipment	a) Using a flashlight, inspect the servos, servo gearboxes, connectors, support structure, and control cables to ensure that no corrosion, chaffing, cracks, or other defects exist. b) If GSM 86 servo gearboxes are installed, check that the retaining bolt for the slip clutch cartridge is not damaged or loose. c) Have an assistant manually move the control surfaces and elevator trim wheel from stop to stop and visually observe the corresponding servo and control cabling. Ensure there is no binding in the control cabling, and that the capstan rotates freely. d) Check the servo control cables in accordance with AC 43.13-1B, Chapter 7, Section 8, Paragraph 7-149 to ensure no fraying, corrosion, or other damage exists. If the condition of the cable is questionable, replace it with a new one. e) Check the tension on the control cables. Refer to the respective servo installation drawing listed in Table 1-2 for cable tension specifications f) Ensure that each cable is correctly attached to the clamps. g) Follow recommended checks for checking main control cables, following the instructions in Chapter 27, Flight Controls, of the King Air 200 Series Maintenance Manual, listed in Table 1-2. h) Reinstall the access panels if no other maintenance is to be performed.	
The GMU 44 units are mounted in the tailcone. To gain access, remove tailcone. Refer to King Air 200 Series Maintenance Manual, listed in Table 1-2, for removal instructions.		
GMU 44 (Qty 2)	a) For each GMU 44, do the following: b) Remove the three Phillips screws holding the GMU access plate to the mounting bracket. Be sure to use a non-magnetic screwdriver to avoid harming the GMU. c) Carefully remove the assembly, taking care not to damage unit or wiring, and inspect the GMU 44 and mounting plate. d) Inspect the mounting hardware and GMU 44 for corrosion or other damage. e) Inspect all exposed GMU wiring and ensure no chaffing, wear, or other damage exists in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Tail Wire Harness Routing drawing, listed in Table 1-2. Pay particular attention to possible areas of chaffing. f) Reinstall the GMU 44.	

Table 4-9, Lightning Strike Inspection Procedure

Item	Description/Procedure	Initials
GTP 59 OAT Probe or Antenna	a) A post lightning strike inspection must be done for a suspected or actual lightning strike to antennas or the OAT probes. Inspect antenna/probe and surrounding installation to ensure that there is no structural damage around the areas where lightning may have attached. If there is visible sign of damage to the probe or antenna, then it should be replaced per section 6. Refer to the Hawker Beechcraft Structural Inspection and Repair Manual listed in Table 1-2 for any aircraft structural repairs.	

4.5 Electrical Bonding Test

The following bonding tests are provided for G1000-equipped 200/B200 King Air aircraft as a requirement beyond what is given in the aircraft maintenance manual. The electrical bonding checks are split into two tests, Phase 3 Electrical Bonding Test and Phase 4 Electrical bonding test. This places the bonding test requirement for each G1000 LRU in the same phase as the visual inspection of that zone to minimize access requirements.

4.5.1 Requirements

All G1000 equipment must be installed. Gain access for the procedure listed below in Section 4.5.3 as required and in accordance with the King Air 200 Series Maintenance Manual. It is recommended that these tests are conducted after visual inspection of the zone to minimize access requirements.

4.5.2 Test Equipment

A milli-ohm meter and Kelvin probes are recommended for this test. However, a standard voltmeter, power supply with adjustable current limit, and ammeter may be substituted. The following procedure is written using the voltmeter, power supply and ammeter. All test equipment must have valid calibration records.

4.5.3 Phase 3 Electrical Bonding Procedure

1. Connect the positive lead of the power supply to the engine compartment grounding bracket (battery negative connection to the airframe). Connect/touch the positive lead of the voltmeter to the same point.

NOTE

Ensure that the voltmeter and power supply probes do not touch, so as not to induce contact resistance.

2. Touch negative lead of power supply to each of the test points listed while performing Step 3. At each point, configure the power supply to produce 1 amp before measuring voltage. (Use an ammeter to ensure current is within 1 amp ±100 milli-amp at each point).
3. Set the voltmeter to measure milli-volts and null the reading. Measure the voltage from the engine grounding bracket (step 1) to each of the following points and record the voltage. (Perform Step 2 at each point to ensure that 1 amp ±100 milli-amp is present before measuring.)

Pilot Compartment

- Top metal case of PFD 1: _____ milli-volts
- Top metal case of PFD 2: _____ milli-volts
- Top metal case of MFD: _____ milli-volts
- Top metal case of GMA 1347D #1: _____ milli-volts
- Top metal case of GMA 1347D #2: _____ milli-volts
- Top metal case of GCU 477: _____ milli-volts
- Top metal case of GMC 710: _____ milli-volts
- GEA 71 #1 body: _____ milli-volts
- GEA 71 #2 body: _____ milli-volts
- GDC 74B #1 body: _____ milli-volts
- GDC 74B #2 body: _____ milli-volts
- OAT 1 Probe base nut (inside fuselage): _____ milli-volts
- OAT 2 Probe base nut (inside fuselage): _____ milli-volts
- GDL 69A body: _____ milli-volts
- Engine Signal Conditioner #1 near mounting holes of case: _____ milli-volts
- Engine Signal Conditioner #2 near mounting holes of case: _____ milli-volts
- PFD1 Cooling fan metal base: _____ milli-volts
- PFD2 Cooling fan metal base: _____ milli-volts
- MFD Cooling fan metal base: _____ milli-volts

Cabin Compartment

- GTX 33 #1 top: _____ milli-volts
- GTX 33 #2 top: _____ milli-volts
- GSA 80 (Roll) Servo body: _____ milli-volts

Ensure that at each PFD or MFD test point, no more than 20 milli-volts (20 mΩ) are present. Ensure that at each other test point, no more than 2.5 milli-volts (2.5 mΩ) are present. In this case, voltage is equivalent to resistance (Ω), given that precisely 1 amp reference current is present.

TIP: If 1 amp reference current cannot be maintained, note the difference between the attainable current and 1 amp reference current. Calculate the percentage difference and apply this to the voltage reading to obtain the equivalent resistance. Example: If the measured current is 1.2 amps, (20% high from the target 1 amp current), then the allowable voltage measurement would be 20% high, 2.5 milli-volts would now be 3.0 milli-volts.

4.5.4 Phase 4 Electrical Bonding Procedure

1. Connect the positive lead of the power supply to the engine compartment grounding bracket (battery negative connection to the airframe). Connect/touch the positive lead of the voltmeter to the same point.

NOTE

Ensure that the voltmeter and power supply probes do not touch, so as not to induce contact resistance.

2. Touch negative lead of power supply to each of the test points listed while performing Step 3. At each point, configure the power supply to produce 1 amp before measuring voltage. (Use an ammeter to ensure current is within 1 amp ±100 milli-amp at each point).
3. Set the voltmeter to measure milli-volts and null the reading. Measure the voltage from the engine grounding bracket (step 1) to each of the following points and record the voltage. (Perform Step 2 at each point to ensure that 1 amp ±100 milli-amp is present before measuring)

Nose Section

- GWX 68 body: _____ milli-volts

Nose Avionics Compartment

- GIA 1 top: _____ milli-volts
- GIA 2 top: _____ milli-volts
- GRS 77 #1 metal base: _____ milli-volts
- GRS 77 #2 metal base: _____ milli-volts
- Standby battery: _____ milli-volts

Rear Fuselage and Empennage

- GMU 44 #1 metal base: _____ milli-volts
- GMU 44 #2 metal base: _____ milli-volts
- GSA 80 (Pitch) Servo body: _____ milli-volts
- GSA 80 (Pitch Trim) Servo body: _____ milli-volts
- GSA 80 (Yaw) Servo body: _____ milli-volts

TIP: If 1 amp reference current cannot be maintained, note the difference between the attainable current and 1 amp reference current. Calculate the percentage difference and apply this to the voltage reading to obtain the equivalent resistance. Example: If the measured current is 1.2 amps, (20% high from the target 1 amp current), then the allowable voltage measurement would be 20% high, 2.5 milli-volts would now be 3.0 milli-volts.

4.6 GRS 77 Earth Magnetic Field Updates

The GRS 77 utilizes an Earth magnetic field model which is updated once every five years. The update is expected to be available from Garmin in each of the following years: 2010, 2015, and every five years thereafter, as long as the GRS 77 remains a Garmin-supported product.

The G1000 system alerts the operator that the magnetic field database is out of date by issuing the message "AHRS SERVICE – AHRS Magnetic-field model needs update". Garmin will distribute update instructions when updates are available. As of this writing, Garmin Service Bulletin #0533 addresses the most recent update to the 2005 database. Service Bulletins may be obtained from www.garmin.com at the 'Dealer Resource Center' portion of the web site.

4.7 GSA 80 Greasing Procedure

The GSA 80 servo greasing procedure is required only when the GSA 80 is removed and reinstalled. Refer to Section 6.11 for details.

4.8 Flaps-in-motion Discrete Input Check

To perform this check, all G1000 and GFC 700 equipment must be installed and operational. Start PFD1 in Configuration Mode and go to the GIA Page Group and select the GIA I/O Configuration Page using the FMS knob. Perform the following checks:

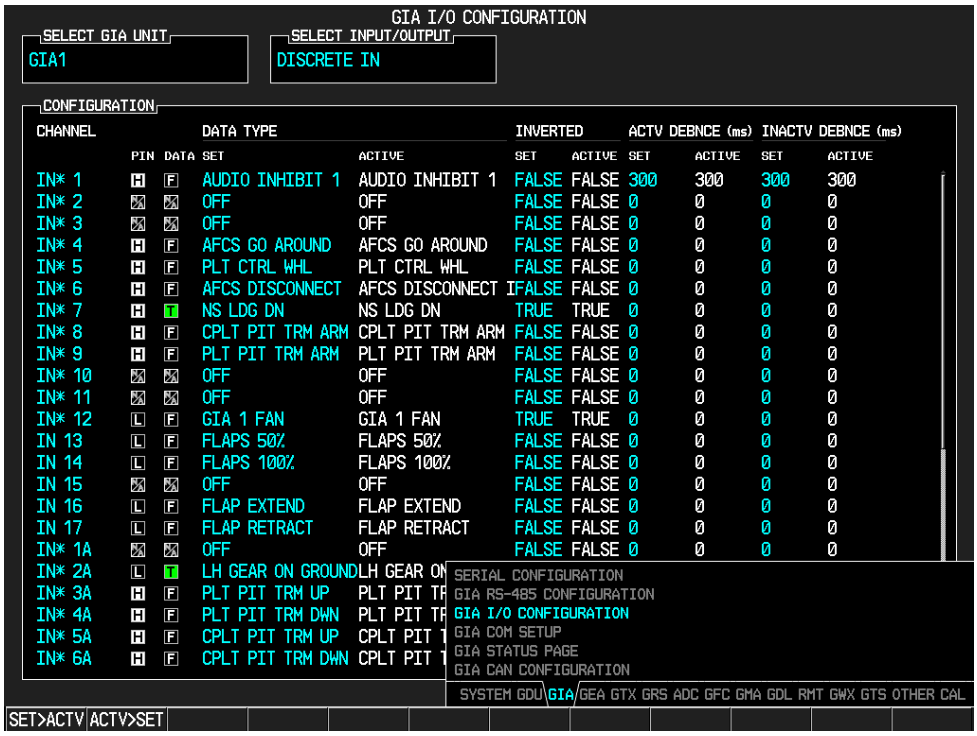

GIA I/O CONFIGURATION
SELECT GIA UNIT
GIA1
SELECT INPUT/OUTPUT
DISCRETE IN
CONFIGURATION
CHANNEL
DATA TYPE
INVERTED
ACTV DEBNCE (ms)
INACTV DEBNCE (ms)
PIN DATA SET
ACTIVE
SET ACTIVE SET ACTIVE SET ACTIVE
IN* 1 H F AUDIO INHIBIT 1 AUDIO INHIBIT 1 FALSE FALSE 300 300 300 300
IN* 2 O O OFF OFF FALSE FALSE 0 0 0 0
IN* 3 O O OFF OFF FALSE FALSE 0 0 0 0
IN* 4 H F AFCS GO AROUND AFCS GO AROUND FALSE FALSE 0 0 0 0
IN* 5 H F PLT CTRL WHL PLT CTRL WHL FALSE FALSE 0 0 0 0
IN* 6 H F AFCS DISCONNECT AFCS DISCONNECT I FALSE FALSE 0 0 0 0
IN* 7 H T NS LDG DN NS LDG DN TRUE TRUE 0 0 0 0
IN* 8 H F CPLT PIT TRM ARM CPLT PIT TRM ARM FALSE FALSE 0 0 0 0
IN* 9 H F PLT PIT TRM ARM PLT PIT TRM ARM FALSE FALSE 0 0 0 0
IN* 10 O O OFF OFF FALSE FALSE 0 0 0 0
IN* 11 O O OFF OFF FALSE FALSE 0 0 0 0
IN* 12 L F GIA 1 FAN GIA 1 FAN TRUE TRUE 0 0 0 0
IN 13 L F FLAPS 50% FLAPS 50% FALSE FALSE 0 0 0 0
IN 14 L F FLAPS 100% FLAPS 100% FALSE FALSE 0 0 0 0
IN 15 O O OFF OFF FALSE FALSE 0 0 0 0
IN 16 L F FLAP EXTEND FLAP EXTEND FALSE FALSE 0 0 0 0
IN 17 L F FLAP RETRACT FLAP RETRACT FALSE FALSE 0 0 0 0
IN* 1A O O OFF OFF FALSE FALSE 0 0 0 0
IN* 2A L T LH GEAR ON GROUND LH GEAR ON
IN* 3A H F PLT PIT TRM UP PLT PIT TR
IN* 4A H F PLT PIT TRM DWN PLT PIT TR
IN* 5A H F CPLT PIT TRM UP CPLT PIT T
IN* 6A H F CPLT PIT TRM DWN CPLT PIT T
SERIAL CONFIGURATION
GIA RS-485 CONFIGURATION
GIA I/O CONFIGURATION
GIA COM SETUP
GIA STATUS PAGE
GIA CAN CONFIGURATION
SYSTEM GDU GIA GEA GTX GRS ADC GFC GMA GDL RMT GWX GTS OTHER CAL
SET>ACTV
ACTV>SET

Figure 4-1, GIA I/O Page

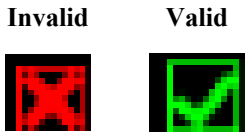


Figure 4-2, Discrete Valid/Invalid Indications

1. Verify the DATA indicators of the discrete inputs labeled ‘FLAP EXTEND’ and ‘FLAP RETRACT’ show an invalid condition.
2. Extend the flaps down. While the flaps are traveling down, check that the DATA indicator of the discrete input labeled ‘FLAP EXTEND’ changes to a valid condition.
3. When the flap motion is completed, verify the DATA indicators of the discrete inputs labeled ‘FLAP EXTEND’ and ‘FLAP RETRACT’ show an invalid condition.
4. Retract the flaps up. While the flaps are traveling up, check that the DATA indicator of the discrete input labeled ‘FLAP RETRACT’ changes to a valid condition.
5. When the flap motion is completed, verify the DATA indicators of the discrete inputs labeled ‘FLAP EXTEND’ and ‘FLAP RETRACT’ show an invalid condition.
6. Repeat steps 1 through 5 for GIA2.
7. The flap discrete input check is complete.

4.9 GSM 85A/GSM 86 Slip Clutch Torque Check Procedure

Perform the test per section 4.9.1, 4.9.2 or 4.9.3. The following test procedures are the same for both the GSM 85A and the GSM 86 servo gearboxes.

4.9.1 Automated Slip Clutch Test Procedure (SW version 0985.04 and later)

1. Verify the correct type of servo gearbox is configured for each servo per Section 3.27.
2. With the MFD in Normal Mode, press the red DISPLAY BACKUP button on the pilot's GMA audio panel to place the MFD in reversion mode.
3. With PFD1 in Configuration Mode, go to the GFC Page Group and select the GFC STATUS page using the FMS knobs.

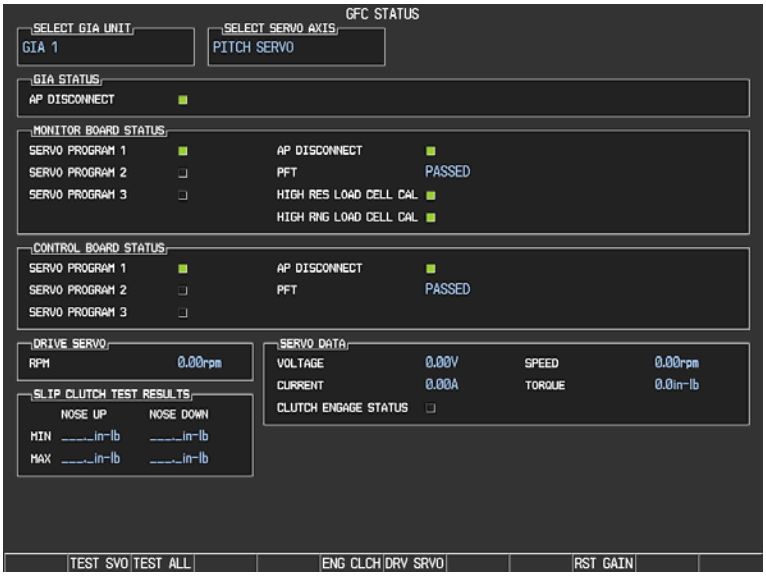


Figure 4-3, GFC Status Page

IMPORTANT!

It is highly recommended that the following test be performed at temperatures between 50° F and 120° F.

4. Use the FMS knob to select the desired servo (Pitch, Roll, Yaw or Pitch Trim).
5. Verify that the PFT status field shows PASSED.
6. Verify that the aircraft control surface to be checked is free to travel throughout its range of motion.
7. Press the TEST SVO softkey on the PFD. Follow prompts to begin the test.

IMPORTANT!

If the test must be stopped, firmly grasp the aircraft control being moved and press the red AP DISC switch on the aircraft control wheel. If an abnormal disconnect of a servo occurs, reset the AFCS SERVO circuit breaker and repeat the test.

8. When test is completed, verify the CLUTCH TEST PASS message is displayed on the MFD.
9. Repeat steps 4 through 8 for each servo axis (Pitch, Roll, Yaw and Pitch Trim).
10. If the CLUTCH TEST FAIL message is displayed on the MFD for any axis, repeat the test twice in the failed axis. If the test does not pass, the servo gearbox must be removed from the aircraft and tested/adjusted per the Servo Gearbox Adjustment Fixture Procedure in Section 4.9.3.

4.9.2 Manual Slip Clutch Test Procedure (SW version 0985.03 and earlier)

1. With PFD1 in Configuration Mode, go to the GFC Page Group and select the GFC STATUS Configuration Page using the FMS knob.

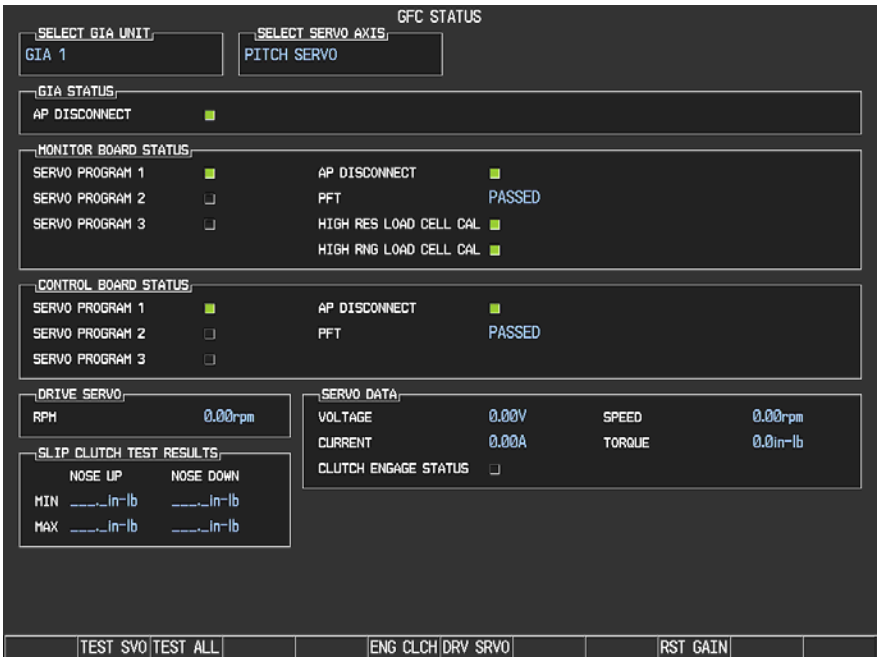


Figure 4-4, GFC Status Page

IMPORTANT!

It is highly recommended that the following test be performed at temperatures between 50° F and 120° F.

2. Use the FMS knob to select the desired servo.
3. Verify that the PFT status field shows PASSED.
4. Verify that the aircraft control surface to be checked is free to travel throughout its range of motion.
5. Press the ENG CLCH softkey on the PFD.
6. With the clutch engaged, take hold of the aircraft controls and manually overcome the clutch. Move the control surface to be tested from stop to stop a minimum of two times each direction.
7. Position the control surface in the neutral position (full forward position if the PITCH SERVO is selected). Press the DIS CLCH softkey.

IMPORTANT!

If the test must be stopped, firmly grasp the aircraft control being moved and press the red AP DISC switch on the aircraft control stick. If an abnormal disconnect of a servo occurs, reset AFCS SERVO circuit breaker and repeat the step.

8. Manually select +2.50 rpm for the Drive Servo and press ENT.
9. Press the ENG CLCH softkey.
10. Press the DRV SRVO softkey.
11. Allow the selected servo to drive the control surface to either the NOSE DOWN stop (Pitch and Pitch Trim) or the LEFT stop (Roll and Yaw).

12. Allow the servo to continue driving against the control stop for at least 50 seconds. Observe the TORQUE values displayed in the Servo Data field and record the maximum and minimum values in Table 4-10 or in the appropriate aircraft maintenance records.
13. Manually select 0.00 rpm for the Drive Servo and press ENT. Allow the servo to stop.
14. Manually select -2.50 for the Drive Servo and press ENT. Allow the selected servo to drive the control surface to either the NOSE UP stop (Pitch and Pitch Trim) or the RIGHT stop (Roll and Yaw). If the PITCH SERVO is selected, firmly hold the control yoke in the full aft position until the NOSE UP portion of the test is completed.
15. Allow the servo to continue driving against the control stop for at least 50 seconds. Observe the TORQUE values displayed in the Servo Data field and record the maximum and minimum values in Table 4-10 or in the appropriate aircraft maintenance records.
16. Manually select 0.00 rpm for the Drive Servo and press ENT. Allow the servo to stop.
17. Firmly grasp the aircraft control under test and press the DIS CLCH softkey.
18. Press the STP SRVO softkey.
19. Repeat steps 2 through 18 for each servo axis shown.
20. Verify that the minimum and maximum torque values measured are within the Minimum and Maximum torque values allowed for the given axis listed in Table 4-10.

Axis	Direction	Min Measured Torque (in-lbs)	Max Measured Torque (in-lbs)	Min Allowed Torque (in-lbs)	Max Allowed Torque (in-lbs)
Pitch	Up			28 (GSM 85A) 24 (GSM 86)	38 (GSM 85A) 40 (GSM 86)
	Down				
Roll	Left			116 (GSM 85A) 99 (GSM 86)	161 (GSM 85A) 168 (GSM 86)
	Right				
Yaw	Left			78 (GSM 85A) 66 (GSM 86)	107 (GSM 85A) 112 (GSM 86)
	Right				
Pitch Trim	Up			52 (GSM 85A) 45 (GSM 86)	71 (GSM 85A) 76 (GSM 86)
	Down				

Table 4-10, Measured Torque

NOTE

If the GSM 85A or GSM 86 measured values exceed the limits in Table 4-10, the servo gearbox must be removed from the aircraft and tested/adjusted per the Servo Gearbox Adjustment Fixture Procedure in Section 4.9.3.

4.9.3 Servo Gearbox Adjustment Fixture Procedure

This test is an alternative to the automated and manual slip clutch test procedures.

Only the GSM 85A servo gearbox slip clutch can be adjusted. The GSM 86 servo gearbox does not have an adjustable slip clutch; however, the torque value can be measured using this procedure.

IMPORTANT!

This adjustment requires the use of the Garmin servo adjustment fixture, P/N T10-00110-01. For detailed operating instructions for the fixture, refer to GSA8X / GSM85(A) Installation Manual, listed in Table 1-3.

It is highly recommended that the following test be performed at temperatures between 50° F and 120° F.

1. Remove the GSM 85A or GSM 86 servo gearbox as per Section 6.12.
2. Place the GSM 85A or GSM 86 servo gearbox on the slip-clutch adjustment fixture and secure with the toggle clamps. Install the fixture cable between the capstan under test and the fixture capstan. Remove the slack in the cable using the tension adjustment knob. Tighten the two wingnuts on bottom of fixture while holding the top thumbscrews.
3. Attach a socket to a calibrated torque wrench of appropriate range and place on top of the fixture capstan. Adjust the wrench support fixture so that it contacts the handle in the appropriate location.
4. Connect a 2 Amp, 24 V, DC power supply to the fixture.
5. Place the solenoid switch to "on" and move the direction switch to the clockwise or counter-clockwise position. Allow the clutch to rotate at least one revolution in each direction (note: the capstan itself is fixed.)
6. Observe the torque reading for at least two full revolutions in each direction. Ensure the minimum and maximum torque readings are within the tolerance specified.
7. If the minimum and maximum torque values are within the specified range in Table 4-11, the GSM slip clutch is acceptable. Reinstall the GSM 85A or GSM 86 servo gearbox per Section 6.12.
8. If the minimum and maximum torque values are not within the specified range in Table 4-11, the GSM 86 slip clutch cartridge must be replaced or the GSM 85A must be adjusted.
9. For GSM 85A only: If adjustment is required, remove cotter pin and adjust the nut on the capstan as needed to obtain the torque value listed in Table 4-11, as shown on the torque wrench. Position the nut to align with holes in the capstan shaft and install a new cotter pin.
10. When finished, remove the fixture cable, and then remove the servo gearbox from the fixture.
11. Install the GSM 85A or GSM 86 servo gearbox per Section 6.12.

Table 4-11, GSM 85A/GSM 86 Slip Clutch Torque Settings

Servo	Pitch Trim*	Pitch	Yaw	Roll
GSM 85A	65 ± 8 in-lbs*	32 ±5 in-lbs	90 ±10 in-lbs	135 ±13 in-lbs
GSM 86	66 ± 19 in-lbs*	32 ± 9 in-lbs	90 ±27 in-lbs	135 ±40 in-lbs

*Valid with continuous travel servo gearbox only

4.10 G1000 Redundant Connection Check

Perform the following steps to verify the following:

(A) The primary (PRI) and secondary (SEC) power sources for GIA 1, GRS 1, PFD 1, and GDC 1

(B) The AHRS and ADC data path to PFD

(C) PFD and MFD Ethernet connection (includes ARINC connection between ADC and MFD and DISPLAY BACKUP button function)

(D) Engine data availability to the displays and GPS data availability to the AHRS with either GIA inoperative

(A) PRI and SEC power sources for PFD 1, GIA 1, GRS 1 and GDC 1 check

1. Connect a ground power unit to the external power receptacle and turn on the ground power unit.
2. Set the BAT and AVIONICS MASTER PWR switches to ON.
3. With the G1000 system in normal mode, pull the following circuit breakers on the right hand circuit breaker panel:
    - PFD 1 (PRI)
    - AHRS 1 (PRI)
    - ADC 1 (PRI)
    - GIA 1 (PRI)
4. Wait at least 5 seconds, then verify the data on PFD1 remains valid and the following alert messages are not present:
    - GIA 1 FAIL (or any related message such as COM1, NAV1, XPDR1, GPS1)
    - AHRS 1 FAIL
    - ADC 1 FAIL
    - FAILED DATA PATH
5. Close the circuit breakers listed in step 3.
6. Repeat step 4.
7. Pull the following circuit breakers on the right hand circuit breaker panel:
    - PFD 1 (SEC)
    - AHRS 1 (SEC)
    - ADC 1 (SEC)
    - GIA 1 (SEC)
8. Wait at least 5 seconds, then repeat step 4.
9. Close the circuit breakers listed in step 7.

(B) AHRS and ADC data path check

1. Verify there are no AHRS loss of data messages, such as:
   - AHRS not receiving any GPS information
   - AHRS not receiving backup GPS information
   - AHRS using backup GPS source
2. Place the G1000 in configuration mode.
3. In the GIA page group, go to the GIA RS-232/ARINC 429 CONFIG page.
4. With GIA1 selected in the SELECT UNIT window, verify the RS232 Channel 1 (GDC74 #1) and RS232 Channel 6 (GRS77 #1) indicators are green. Ref. Section 5.2.1.2.
5. With GIA1 selected in the SELECT UNIT window, verify the ARINC 429 IN5 (GDC74 #1) and ARINC 429 IN6 (GRS77 #1) indicators are green. Ref. Section 5.2.1.2.
6. With GIA2 selected in the SELECT UNIT window, verify the RS232 Channel 1 (GDC74 #2) and RS232 Channel 6 (GRS77 #2) indicators are green. Ref. Section 5.2.1.2.
7. With GIA2 selected in the SELECT UNIT window, verify the ARINC 429 IN5 (GDC74 #2) and ARINC 429 IN6 (GRS77 #2) indicators are green. Ref. Section 5.2.1.2.
8. In the GDU page group, go to the GIA RS-232/ARINC 429 CONFIG page.
9. With PFD1 selected in the SELECT UNIT window, verify the ARINC 429 IN1 (GRS77 #1) and ARINC 429 IN2 (GDC74 #1) indicators are green. Ref. Section 5.2.1.1.
10. With PFD2 selected in the SELECT UNIT window, verify the ARINC 429 IN1 (GRS77 #2) and ARINC 429 IN2 (GDC74 #2) indicators are green. Ref. Section 5.2.1.1.
11. Restart the G1000 in normal mode.

(C) PFD and MFD Ethernet connection check (includes ARINC connection check between ADC1 and MFD and between GRS1 and MFD, and the DISPLAY BACKUP button check)

1. On the right hand circuit breaker panel, open the MFD circuit breaker:
2. Verify NAV 1, COM 1, NAV 2 and COM 2 remain valid on both PFD 1 and PFD 2.
3. Close the MFD circuit breaker and wait for MFD to initialize:
4. Open the PFD 2 circuit breaker:
5. Press the DISPLAY BACK UP button on the Pilot's GMA 1347D audio panel.
6. Verify NAV 2 and COM 2 are each replaced by a red X and NAV 1 and COM 1 remain valid on both the MFD and PFD 1.
7. Press the DISPLAY BACK UP button on the Pilot's GMA 1347D audio panel to return to normal mode.
8. Close the PFD 2 circuit breaker and wait for PFD 2 to initialize.
9. Open the PFD 1 (PRI) and PFD 1 (SEC) circuit breakers.
10. Press the DISPLAY BACK UP button on the Co-pilot's GMA 1347D audio panel.
11. Verify NAV 1 and COM 1 are each replaced by a red X and NAV 2 and COM 2 remain valid on both the MFD and PFD 2.
12. Verify ADC1 data and GRS1 data can be displayed on the MFD.
13. Press the DISPLAY BACK UP button on the Co-pilot's GMA 1347D audio panel to return to normal mode.
14. Close the PFD 1 (PRI) and PFD 1 (SEC) circuit breakers and wait for PFD 1 to initialize:

(D) Engine data availability to the displays and GPS data availability to the AHRS with either GIA inoperative check

1. Open GIA1 primary and secondary CBs.
2. Verify the following:
   - NAV 1 and COMM1 tuning fields on PFD 1 and PFD 2 are invalid (red X).
   - L/R engine data remains valid.
   - XPDR1 is Inoperative.
   - GMA1 is Inoperative.
   - AHRS1 is using backup GPS source.
   - AHRS2 not receiving backup GPS Information.
   - An amber BOTH ON GPS2 is displayed on PFD 1 and PFD 2.
   - AHRS and ADC data remain valid on PFD 1 and PFD 2.
3. Close GIA1 primary and secondary CBs. Allow system to re-acquire satellites and return to normal display modes.
4. Open GIA2 CB.
5. Verify the following:
   - NAV2 and COMM2 tuning fields on PFD 1 and PFD 2 are invalid (red X).
   - L/R engine data remains valid.
   - XPDR2 is Inoperative.
   - GMA2 Is Inoperative.
   - AHRS2 is using backup GPS source.
   - AHRS1 not receiving backup GPS Information.
   - An amber BOTH ON GPS1 is displayed on PFD 1 and PFD 2.
   - AHRS and ADC data remain valid on PFD 1 and PFD 2.
6. Close GIA2 CB. Allow system to re-acquire satellites and return to normal display modes.
7. Open GIA1 primary and secondary CBs and GIA2 CB.
8. Verify the following:
   - COM1/NAV1 & COM2/NAV2 fields flag invalid.
   - GPS CDI flags DR on PFD.
   - NAV1 & NAV2 CDI loses deviation bar.
   - XPDR field flags invalid on PFD.
   - Engine Instrument field flags invalid on MFD.
   - All AHRS & ADC fields remain valid.
   - Red AFCS status annunciation given.
   - If equipped with TAWS, TAWS FAIL annunciation given.
   - If equipped with ADF and/or DME, ADF/DME windows flag invalid.
9. Restore power to both GIA units.

The G1000 Redundant Connections Check is complete.

4.11 Engine Data Check (GIA 1 or GIA 2 Inoperative)

NOTE

This procedure should be accomplished in conjunction with the engine run-up. Valid engine indications will be needed.

Do the following to verify the engine data availability and validity, with GIA 1 or GIA 2 inoperative:

1. Ensure the G1000 is in normal mode.
2. With engines running, note the indication values for torque, ITT and oil pressure.
3. On the right hand circuit breaker panel, open the GIA1 (PRI) and GIA1 (SEC) circuit breakers.
4. Verify the values for torque, ITT and oil pressure remain unchanged.
5. Close the GIA1 (PRI) and GIA1 (SEC) circuit breakers and wait until the COM1 and NAV1 fields are valid.
6. Open the GIA2 circuit breaker.
7. Verify the values for torque, ITT and oil pressure remain unchanged.
8. Close the GIA2 circuit breaker and wait until the COM2 and NAV2 fields are valid.
9. Put the G1000 in Reversionary mode.
10. Repeat steps 2 through 8, verifying engine gauge indications on PFD 1, MFD and PFD 2.
11. The Engine Data Check is complete.

4.12 Trim Annunciator Check

This procedure checks the pitch trim (**PTRM**) annunciation from both GIA 1 and GIA 2 and the mis-trim AFCS status alerts.

1. Ensure the G1000 is in normal mode, autopilot is not engaged, and the mode controller XFR key is selected to the pilot side.
2. Press the left part of the pilot's pitch-trim switch upwards for approximately 10 seconds and verify that the red **PTRM** annunciation is displayed on both PFD 1 and PFD 2.
3. Release the switch and wait for the **PTRM** annunciation to clear.
4. Press the left part of the pilot's pitch-trim switch downwards for approximately 10 seconds and verify that the red **PTRM** annunciation is displayed on both PFD 1 and PFD 2.
5. Release the switch and wait for the **PTRM** annunciation to clear.
6. Repeat Steps 2 through 5 for the right part of the pilot's pitch-trim switch.
7. Repeat Steps 2 through 6 for the copilot's pitch-trim switch.
8. Select copilot side by pressing the XFR key on the mode controller (changes active GIA to GIA 2).
9. Repeat Steps 2 through 7 and verify annunciations are displayed on both PFD 1 and PFD 2.
10. Re-select pilot side by pressing XFR key on the mode controller (changes active GIA back to GIA 1).
11. Hold the control yoke in the center position and center the pitch trim wheel.
12. Press the Go Around button on the throttle and engage the autopilot. Apply a forward load on the control yoke. Verify that the pitch trim wheel rotates in the UP direction.
13. Disconnect the autopilot by pressing the AP DISC button.

14. Hold the control yoke in the forward position and center the pitch trim wheel.
15. Engage the autopilot, maintain the control yoke in the forward position and keep the pitch-trim wheel from rotating for approximately five seconds.
16. Quickly release the trim wheel and verify that the red **PTRM** annunciator is displayed on both PFD 1 and PFD 2.
17. Disengage the autopilot and use the pitch-trim switch (or the pitch-trim wheel) to trim full down.
18. Hold the control yoke in the full forward position.
19. Engage the autopilot, apply firm aft pressure on the control yoke for approximately 10 seconds, allowing the pitch-trim wheel to move freely. Verify that the amber **ELE**↓ annunciator is displayed on both PFD 1 and PFD 2.
20. Disengage the autopilot and use the pitch-trim switch (or the pitch-trim wheel) to trim full up.
21. Move the control yoke to the full aft position and hold.
22. Press the Go Around button on the throttle and engage the autopilot. Apply firm forward pressure on the control yoke for approximately 10 seconds, allowing the pitch-trim wheel to move freely. Verify that the amber **ELE**↑ annunciator is displayed on both PFD 1 and PFD 2.
23. Disengage the autopilot.

NOTE

If the **ELE** annunciation appears during any of the following steps, reset the trim wheel and repeat the test step.

24. Use the pitch-trim switch (or the pitch-trim wheel) to trim full down.
25. Hold the elevator in the neutral position, press the **HDG** and **ALT** buttons on the mode controller and center the heading bug.
26. Engage the autopilot and turn the heading knob to set the heading bug to the right of center. Hold the control yoke centered for approximately 10 seconds. Verify that the amber **AIL**→ annunciator is displayed on both PFD 1 and PFD 2.
27. Turn the heading knob to set the heading bug to the left of center. Hold the control yoke centered for approximately 10 seconds. Verify that the amber ←**AIL** annunciator is displayed on both PFD 1 and PFD 2.
28. Disengage the autopilot and clear all modes.
29. Ensure the aircraft is on the ground and the nose wheel is approximately straight.
30. Engage the yaw damper and apply firm load on the right rudder pedal for approximately 20 seconds.
31. Verify that the amber ←**RUD** annunciator is displayed on both PFD 1 and PFD 2.
32. Apply firm load on the left rudder pedal for approximately 20 seconds.
33. Verify that the amber **RUD**→ annunciator is displayed on both PFD 1 and PFD 2.
34. Disengage autopilot.
35. The Trim Annunciator Check is complete.

4.13 G1000 Miscompare Checks

This procedure will check the AHRS, airspeed and altitude miscompare monitors. Accomplish the following checks with the aircraft positioned where it can receive GPS signals and magnetic heading. Access to AHRS1 and AHRS2 will be required during this test.

1. Ensure the G1000 is operating in normal mode.

2. Connect a pitot/static test set to the aircraft ADC1 pitot and static ports (Pilot's side). (Do not connect the pitot/static tester to ADC2 ports at this time.)
3. Set the baro-correction on PFD1 and PFD2 to 29.92.
4. On the AFCS mode controller, press the ALT, HDG, and AP buttons and verify autopilot engages.
5. Slowly increase the pitot/static test set to simulate an ADC1 / ADC2 altitude miscompare of greater than 200 ft., verify the disconnected ADC altitude does not increase, autopilot does not disconnect and amber comparator window text "ALT MISCOMP" is displayed on PFD1 and PFD2.
6. Reduce ADC1 altitude to ambient pressure.
7. Repeat Step 5 with the pitot/static test set connected to the aircraft ADC2 pitot and static ports.
8. Use the pitot/static test set to simulate an airspeed of 40 kts for ADC1 and 55 kts for ADC2. Verify the autopilot does not disconnect and amber comparator window text "IAS MISCOMP" is displayed on PFD 1 and PFD2.
9. Use the pitot/static test set to simulate an airspeed of 55 kts for ADC1 and 40 kts for ADC2. Verify the autopilot does not disconnect and amber comparator window text "IAS MISCOMP" is displayed on PFD 1 and PFD2.
10. Use the pitot/static test set to simulate an airspeed of 85 kts for ADC1 and 95 kts for ADC2. Verify the autopilot does not disconnect and amber comparator window text "IAS MISCOMP" is displayed on PFD 1 and PFD2.
11. Use the pitot/static test set to simulate an airspeed of 95 kts for ADC1 and 85 kts for ADC2. Verify the autopilot does not disconnect and amber comparator window text "IAS MISCOMP" is displayed on PFD 1 and PFD2.
12. Reduce ADC1 and ADC2 airspeeds to 0 kts.
13. Slowly rotate AHRS1 along the lateral (pitch) axis to a pitch attitude of greater than 5 degrees, verify the following:
    - AHRS2 pitch attitude does not change
    - An amber "PIT MISCOMP" is annunciated on PFD1 and PFD2
    - Autopilot disconnects at approximately 5 deg AHRS1 / AHRS2 miscompare
    - The autopilot disconnect audio alert (two hi-low tones) sounds
    - A red flashing AP annunciator on PFD1 and PFD2
    - Flight director command bars remain in view with autopilot in HDG and ALT mode
14. Replace AHRS1 to normal attitude and verify that attitude display on PFD1 displays current aircraft attitude.
15. Use the AFCS mode controller to re-engage autopilot.
16. Slowly rotate AHRS1 along the longitudinal (roll) axis to a roll attitude of greater than 5 degrees, verify the following:
    - AHRS2 roll attitude does not change
    - An amber "ROL MISCOMP" is annunciated on PFD1 and PFD2
    - Autopilot disconnects at approximately 5 deg AHRS1 / AHRS2 miscompare
    - The autopilot disconnect audio alert (two hi-low tones) sounds
    - A red flashing AP annunciator on PFD1 and PFD2
    - Flight director command bars remain in view with autopilot in HDG and ALT mode

17. Replace AHRS1 to normal attitude and verify that attitude display on PFD1 displays current aircraft attitude.
18. Repeat Steps 13 through 17 for AHRS2.
19. The G1000 Miscompare checks are complete.

4.14 Nose Avionics Compartment Fans Operational Check

This procedure will verify that airflow is present from the ported avionics cooling fans to the #1 and #2 GIA units. The fan speed monitoring circuits and annunciations are checked by the G1000 Cooling Fan Fail Annunciation Check in Section 8.1.4 and a Visual Inspection of the fan and its hoses is accomplished in Section 4.4. This check requires the G1000 to be powered on.

1. Gain access to the nose avionics compartment.
2. Disconnect cooling fan hose from the pilot side GIA and verify airflow is present.
3. Reconnect the cooling fan hose to the GIA.
4. Repeat Steps 2 through 3 for the copilot side GIA.
5. The Nose Avionics Compartment Fans Operational Check is complete.

4.15 Instrument Panel Fans Operational Check

This procedure will verify that airflow is present from the PFD1, MFD and PFD2 cooling fans. The fan speed monitoring circuits and annunciations are checked by the G1000 Cooling Fan Fail Annunciation Check in Section 8.1.4. This check requires the G1000 to be powered on.

1. Remove PFD1 as described in Section 6.1.
2. Identify the PFD1 cooling fan and verify airflow is present.
3. Reinstall PFD1 as described in Section 6.1.
4. Repeat Steps 1 through 3 for the MFD and PFD2.
5. The Instrument Panel Fans Operational Check is complete.

4.16 Standby Battery Periodic Checks

4.16.1 Charge Check

Refer to the PS-835 Emergency Power Supply Installation Manual listed in Table 1-2.

With the PS-835 battery installed in the aircraft and aircraft power applied, verify all four Battery Voltage LEDs are lit to indicate the battery is being charged (see Figure 4-5).

With the PS-835 battery installed in the aircraft and no aircraft power applied, press TEST SWITCH (Figure 4-5, Item 4) into TEST position for 5 seconds. The PS-835 indicates that it is adequately charged when the VOLTAGE LEVEL 24Vdc LED (Figure 4-5, Item 2) illuminates momentarily, AND the 20Vdc LED (Figure 4-5, Item 6) remains lit during the test. If the VOLTAGE LEVEL 24Vdc LED does not, at least momentarily, illuminate while the 20Vdc LED is illuminated, perform the Section 4.16.3 Cell Isolation Test because the battery is incapable of providing adequate power.

Table 4-12, Standby Battery Required Equipment

DESCRIPTION	VENDOR/SPECIFICATION
Power Supply	0-30 VDC, 20A capacity
DVM	Fluke Model 8050A
Load Resistor	7Ω +/- 1% 250 watt
Stopwatch	Capable of measuring to the minute

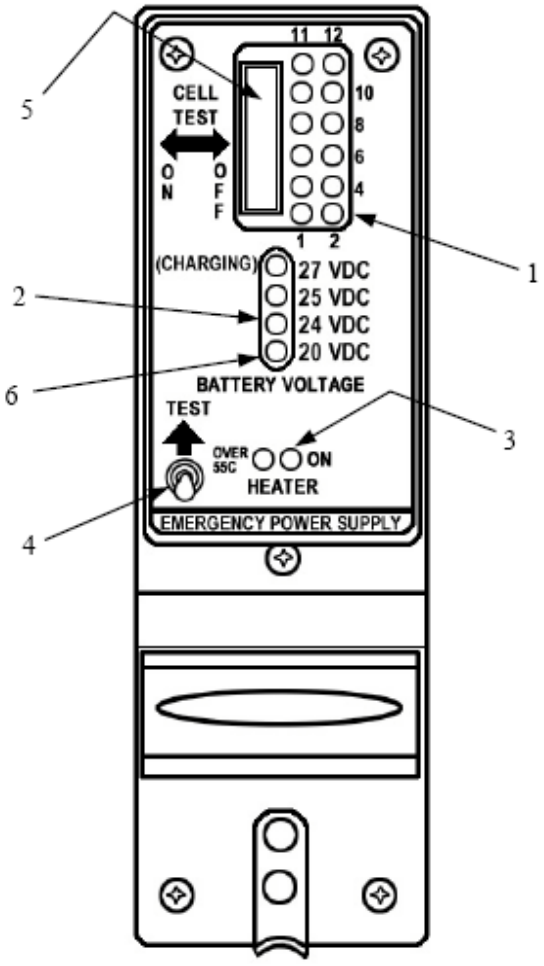


Figure 4-5, Standby Battery

4.16.2 Capacity Test

NOTE

The PS-835 Emergency Power Supply must have completed a full charge prior to any discharge testing. This test is performed with the battery removed from the aircraft.

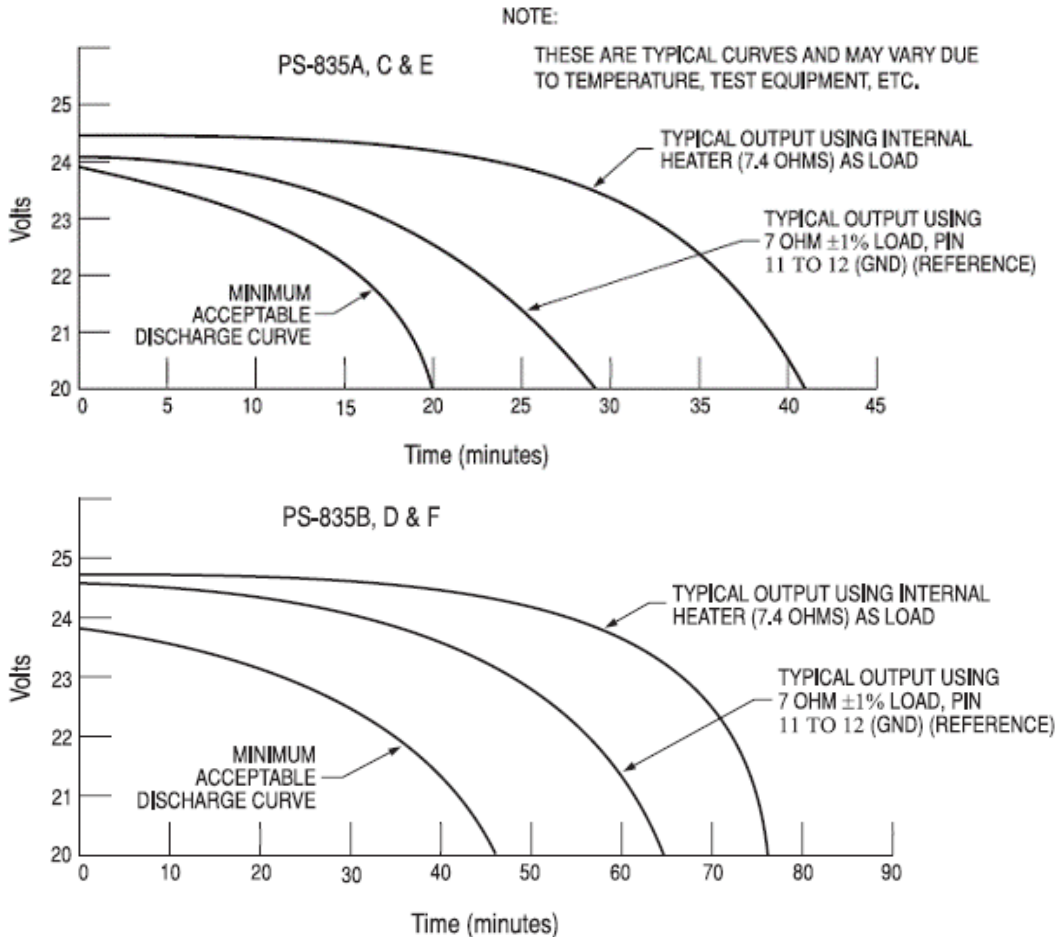
A. Press and hold TEST SWITCH (Figure 4-5, Item 4) and observe the OUTPUT VOLTAGE MONITOR LED's.

1) If the 24VDC OUTPUT VOLTAGE MONITOR LED comes on, proceed with Discharge Test procedure.

2) If OUTPUT VOLTAGE MONITOR LED's do not come on, check fuses at bracket next to battery and replace if blown. Perform Cell Isolation Test if no fuses are blown.

B. Discharge Test (Load Resistor)

1) Prepare for test by first constructing an X-Y graph similar to the one shown below. If possible, use pre-printed graph paper to create a record of the discharge period along the X-axis and voltage readings along the Y-axis.



2) Position all INDIVIDUAL CELL DIP SWITCHES (Figure 4-5, Item 5) to the ON position.

If the INDIVIDUAL CELL MONITOR LED DS12 is the only LED not illuminated, proceed to the Cell Isolation Test.

3) Connect Digital Voltmeter leads to J1 connector pins 11 (+) and 7 (-).

4) Connect the Load Resistor across J1 connector pins 11 (+) and7 (-) and start timing the discharge period with a stopwatch.

5) Monitor and plot voltage values at 10-minute intervals.

6) At 48.0 minutes note voltage on Digital Voltmeter. This voltage must be greater than 20.0 Vdc.

   a. All INDIVIDUAL CELL MONITOR LED's (Figure 4-5, Item 1) must remain on.

   b. Any LED that does go OFF will represent a defective individual cell, which must be replaced.

7) Remove the Load Resistor from J1 connector pins 11 (+) and 7 (-).

8) Position all INDIVIDUAL CELL DIP SWITCHES (Figure 4-5, Item 5) to the OFF position.

9) Compare the voltage vs. time plot created during this test to that of curve identified as typical for the External Load test method on the chart above. If the plot reveals a discharge curve that meets or exceeds the MINIMUM ACCEPTABLE DISCHARGE CURVE, the unit is considered satisfactory.

10) If unit discharge plot is satisfactory and no other failures were revealed, perform the Charging Procedure within 2 hours of completion of the discharge test. Return the unit into service.

4.16.3 Cell Isolation Test

NOTE

No power should be applied to PS-835 Emergency Power Supply during test. This test is performed with the battery removed from the aircraft.

A. Press and hold TEST SWITCH (Figure 4-5, Item 4). If no OUTPUT VOLTAGE MONITOR LED's come on:

   1) Position all INDIVIDUAL CELL DIP SWITCHES (Figure 4-5, Item 5) to the ON position.

   2) Press and hold TEST SWITCH (Figure 4-5, Item 4) and observe the INDIVIDUAL CELL MONITOR LED's (Figure 4-5, Item 1).

      a. If all INDIVIDUAL CELL MONITOR LED's come on except DS12, the unit is damaged and requires repair at an authorized repair station.

      b. If all INDIVIDUAL CELL MONITOR LED's are on, a low-battery voltage condition exists.

B. Perform the Charging Procedure.

4.16.4 Charging Procedure

(Constant-Voltage Charging Method)

Locally manufacture a power cable using 16AWG wire and the appropriate mating connector. Include a Diode (15 Adc (min), 50.0 PIV or greater) to prevent battery discharge in case of loss of power from the power source. Using the external power supply apply 30.0 Vdc (10A maximum current limited) to J1 connector pins 11 (+) and 7 (-) and charge the unit for 16 hours. The batteries should reach 80% capacity within 1 hour and full charge at 16 hours.

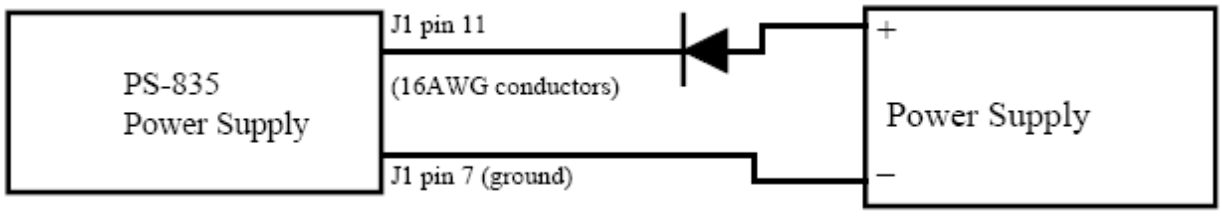


Figure 4-6, Power Supply Connection

4.17 Power Bus Check

4.17.1 Power Bus Feeder Check

This procedure will verify the availability of the feeders to the essential bus and the No.1 and No.2 dual feed buses.

1. Apply external power. Turn BATT and AVIONICS MASTER switches to ON position. Verify all circuit breakers are closed. Observe PFD1, PFD2 and MFD displays and verify all displays are powered and in normal format. Verify the absence of red Xs or alert messages. Select, or verify selected, on-side sensors for PFD1 and PFD2.
2. Open the ESS BUS PRI circuit breaker. Verify the MFD remains powered
3. Open the ESS BUS SEC circuit breaker. Verify the MFD is not powered
4. Close the ESS BUS PRI circuit breaker. Verify the MFD powers up.
5. Close the ESS BUS SEC circuit breaker.
6. Open the No. 1 dual bus feeder circuit breakers (RH NO.1, LH NO.1). Verify PFD1 FAN FAIL and GIA1 FAN FAIL alert messages are shown on the PFD. If the messages are not shown, check the dual-bus feeder circuit breakers (RH NO.1, LH NO.1) and the diode (CR1002) between No. 1 dual feed bus and the essential bus. After replacement of the faulty component, the test should be repeated.
7. Close No 1 dual bus feeder circuit breaker RH No 1. Verify PFD1 FAN FAIL and GIA1 FAN FAIL alert messages are not shown on the PFD. If messages illuminates check dual bus feeder circuit breaker RH No 1, associated limiter and diode.
8. Open No 1 dual bus feeder circuit breaker RH No 1.
9. Close No 1 dual bus feeder circuit breaker LH No 1. Verify PFD1 FAN FAIL and GIA1 FAN FAIL alert messages are not shown on the PFD. If messages illuminates check dual bus feeder circuit breaker LH No 1, associated limiter and diode.
10. Close No 1 dual bus feeder circuit breaker RH No 1.
11. Open No 2 dual bus feeder circuit breaker LH No. 2. Verify PFD 2 remains powered. If power to PFD 2 is removed, check dual bus feeder circuit breaker RH No 2, associated limiter and diode.
12. Open No 2 dual bus feeder circuit breaker RH No 2. Verify PFD 2 is not powered.
13. Close No 2 dual bus feeder circuit breaker LH No 2. Verify PFD 2 powers up. If PFD 2 remains without power, check dual bus feeder circuit breaker LH No 2, associated limiter and diode.
14. Close No 2 dual bus feeder circuit breaker RH No 2.
15. If no other service is to performed, remove aircraft power.

4.17.2 Dual Bus-Feeder Diodes Check

Supersedes King Air 200 Series Maintenance Manual 24-50-00 periodic inspection of dual bus feeder diodes.

1. Remove aircraft power by turning BATT and AVIONICS MASTER switches to OFF position.
2. Remove all electrical power from the airplane.
3. Remove the center aisle floorboards and covers as necessary to gain access to the power distribution panel (A145).
4. Remove the left isolation limiter (F131).

5. Apply external power. Turn BATT and AVIONICS MASTER switches to ON position.
6. Bus voltage SHOULD be present on the right isolation bus (W109). Verify that the GDL69 FAIL alert message is NOT shown on the PFD. Operation of the GDL 69A verifies continuity of the right isolation limiter (F132).
7. By observing the following annunciators, power to each of the four buses will be verified: L FUEL PRESS, R FUEL PRESS, L BL AIR FAIL and R BL AIR FAIL. If any of the annunciators fail to illuminate, the associated limiter (F148, F149, F150 or F154), one of the four dual-bus-feeder diodes (CR2) or dual-bus circuit breakers (RH NO. 1, RH NO. 2, RH NO. 3 or RH NO. 4) is open. If failure of an annunciator is apparent, reset or replace the faulty component and repeat the test.
8. Units on the No. 1 avionics bus SHOULD NOT operate. Verify COM 2 is not powered by observing a red X is displayed in COM 2 tuning window. If COM 2 is powered, at least one of the dual-bus-feeder diodes is shorted. Detection of the shorted diode (diodes) may be accomplished by opening the following dual-bus-feeder circuit breakers: (LH NO. 1, LH NO. 2, LH NO. 3 or LH NO. 4). After replacement of the shorted diode (diodes), the test should be repeated.
9. Remove all electrical power from the airplane.
10. Reinstall the left isolation limiter (F131). Remove the right isolation limiter (F132).
11. Apply external power. Turn BATT and AVIONICS MASTER switches to ON position
12. Bus voltage SHOULD be present on the left isolation bus (W108). Units on the No.1 avionics bus SHOULD operate. Verify COM 2 is powered by observing a frequency is displayed in COM 2 tuning window. Operation of COM2 will verify continuity of the left isolation limiter (F131).
13. By observing the following annunciators, power to each of the four buses will be verified: L FUEL PRESS, R FUEL PRESS, L BL AIR FAIL and R BL AIR FAIL. If any of the annunciators fail to illuminate, the associated limiter (F145, F146, F147 or F153), one of the four dual-bus-feeder diodes (CR1) or dual-bus circuit breakers (RH NO. 1, RH NO. 2, RH NO. 3 or RH NO. 4) is open. If failure of an annunciator is apparent, reset or replace the faulty component and repeat the test.
14. The GDL 69A SHOULD NOT operate. Verify that the GDL69 FAIL alert message IS shown on the PFD. If the GDL 69A DOES operate, at least one of the dual-bus-feeder diodes (CR2) is shorted. Detection of the shorted diode (diodes) may be accomplished by opening the following dual-bus-feeder circuit breakers: (LH NO. 1, LH NO. 2, LH NO. 3 or LH NO. 4). After replacement of the shorted diode (diodes), the test should be repeated.
15. Remove all electrical power from the airplane.
16. Reinstall the right isolation limiter (F132).

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5 TROUBLESHOOTING

This section provides instructions and guidance for G1000 system troubleshooting, as installed in the King Air 200/B200.

IMPORTANT!

Sections 6, 7 and 8 provide detailed instructions on equipment removal, replacement, configuration, and return-to-service testing. Anytime a G1000 component or LRU is removed, swapped, or replaced, the technician must follow the procedures given in Sections 6, 7 and 8 to ensure proper operation of the system.

Troubleshoot the G1000 system by first identifying, then isolating the specific failure to the responsible LRU. There are several indications that the G1000 presents to the pilot or technician, showing overall system condition. A course of action should be determined based on the information presented on the display. This section shows possible scenarios likely to be encountered during normal operation and gives troubleshooting guidance to the technician to resolve problems.

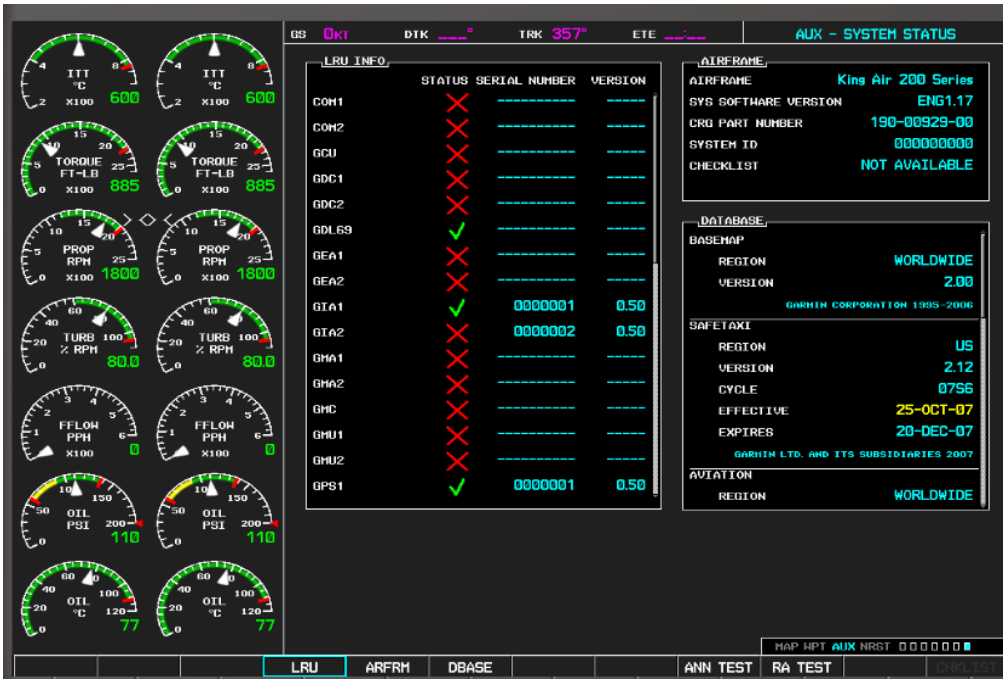


Figure 5-1, AUX – System Status Page

The AUX – System Status page is the 5th page in the AUX Page Group and displays the following information for each LRU and sub-function:

- Status: A green check is displayed for properly operating LRUs. A red 'x' appears when an internal LRU fault is detected and it has taken itself offline, or if the MFD can not communicate with the LRU.
- Serial Number: Each LRU serial number is displayed (functions such as GPS and GS are contained within an LRU; therefore, serial numbers are not shown for these).
- Current SW Version Loaded.

When troubleshooting, first check to ensure that each LRU status is 'green' and that the correct software is loaded in each unit. Additional airframe and database information is also displayed on this page.

5.1 G1000 Alerting System

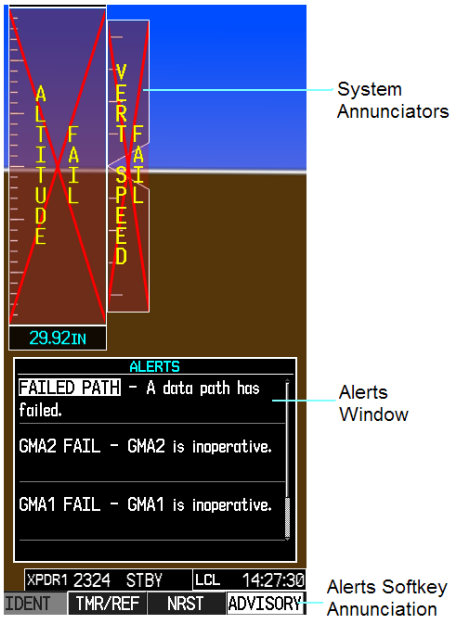


Figure 5-2, Alerts & Annunciations

The G1000 Alert System conveys alerts to the pilot using combinations of the following features:

Alert Window:

The Alert window displays alert text messages. Pressing the ALERTS softkey displays the Alerts window. Pressing the ALERTS softkey again removes the Alerts window from the display.

Softkey Annunciation:

When the G1000 Alerting System issues an alert, the ALERTS softkey is used as a flashing annunciation to accompany the alert. During the alert, the ALERTS softkey label changes to ADVISORY as shown in Figure 5-3. Pressing the ADVISORY softkey annunciation acknowledges the presence of the alert and displays the advisory message in the Alert Window.

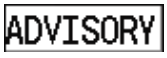


Figure 5-3, ADVISORY Softkey Annunciation

System Failure Annunciations:

Typically, a large red X appears in windows when a failure is detected in the LRU providing the information to the window.

Aural & Audio Alerts

The G1000 system is capable of issuing audio and aural (voice) alerts for various situations. The following alerts are utilized by the G1000:

Alert Name	Purpose
Traffic (voice)	Traffic Advisory
No Traffic (voice)	Traffic Unavailable
“Minimums, Minimums” (voice)	Minimums Aural Alert
Alt Alert (aural)	Altitude Alerting Function
“Caution Terrain, Caution Terrain” (voice) *and* “Terrain Ahead, Terrain Ahead” (voice)	TAWS **Caution** alert: Reduced required terrain clearance Or Imminent impact with terrain.
“Terrain Terrain, Pull Up Pull Up” (voice) *and* “Terrain Ahead Pull Up, Terrain Ahead Pull Up” (voice)	TAWS **Warning** alert: Reduced required terrain clearance Or Imminent impact with terrain.
“Terrain Terrain” (voice)	TAWS **Caution** alert: GPWS mode 2, Excessive Closure Rate
“Too Low Terrain” (voice)	TAWS **Caution** alert: GPWS mode 4A/B/C, Flight into terrain, takeoff or high speed
“Too Low Gear” (voice)	TAWS **Caution** alert: GPWS mode 4A/B, Flight into terrain, gear not extended
“Too Low Flaps” (voice)	TAWS **Caution** alert: GPWS mode 4B, Flight into terrain, flaps not extended
“Sink Rate” (voice)	TAWS **Caution** alert: GPWS mode 1, Excessive Descent Rate
“Pull Up” (voice)	TAWS **Warning** alert: GPWS mode 1 or 2, Excessive Descent Rate Or Excessive Closure Rate
“Don’t Sink” (voice) *or* “Too Low Terrain” (voice)	TAWS **Caution** alert: GPWS mode 3, altitude loss after takeoff or go-around
“Glide Slope” (voice) *or* “Glide Path” (voice)	TAWS **Caution** alert: GPWS mode 5, Glide Slope/Path deviation
“Five Hundred” (voice) *or* “Four Hundred” (voice) *or* “Three Hundred” (voice) *or* “Two Hundred” (voice) *or* “One Hundred” (voice)	TAWS voice callout: GPWS mode 6, voice callout as appropriate per altitude
“Caution Obstacle, Caution Obstacle” (voice) *or* “Obstacle Ahead, Obstacle Ahead ” (voice)	TAWS **Caution** alert: Reduced required obstacle clearance Or Imminent impact with obstacle.
“Obstacle Obstacle Pull Up Pull Up” (voice) or “Obstacle Ahead Pull Up, Obstacle Ahead Pull Up” (voice)	TAWS **Warning** alert: Imminent impact with obstacle.
“TAWS System Failure” (voice)	TAWS status alert: Terrain failure
“TAWS Not Available” (voice)	TAWS status alert: Terrain not available
“TAWS System Test, OK” (voice)(If passed) or “TAWS System Failure” (voice) (If test failed)	TAWS status alert: Terrain self-test
“TAWS Available” (voice)	TAWS status alert: Terrain available
“Vertical Track” (voice)	Vertical navigation alerting function

5.2 System Annunciations

If data fields become invalid due to an LRU failure, the PFD/MFD typically annunciates the failure with a large red X, as shown in Figure 5-4.

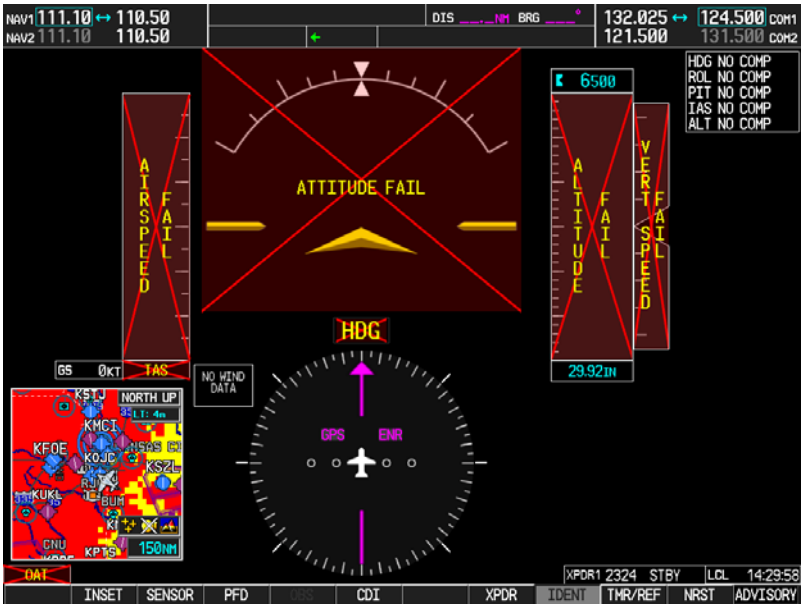


Figure 5-4, System Annunciations

5.2.1 Failed Path Messages

The following message indicates there is a data path connected to the GDU (PFD1, PFD1, or MFD) or the GIA 63W (1 or 2) that has failed.

FAILED PATH – A data path has failed.

The **FAILED PATH** message is triggered by a timeout of any one digital channel. The channels that are checked are listed on these pages in config mode:

1) GDU RS-232 / ARINC 429 CONFIG (PFD1/2, and MFD)
2) GIA RS-232 / ARINC 429 CONFIG (GIA1 and GIA2)
3) GIA CAN / RS-485 CONFIGURATION (GIA1 and GIA2)

IMPORTANT!

Once the FAILED PATH message has been triggered, it will remain on the list of messages until the next power cycle. This latching was implemented so that for intermittent failures, the message would remain at the end of the flight (to alert maintenance crew). Also, this keeps the crew from having to acknowledge message repeatedly in the case of intermittent failures.

The box next to each channel indicates the current status of the channel per the below:

- Red X = data path is known to be failed
- Amber question mark (?) = data path status is unknown
- Green checkmark (✓)= data path is known to be good

The applicable data paths can be verified by viewing the following configuration mode pages.

5.2.1.1 GDU RS-232 / ARINC 429 CONFIG Page

PFD 1 RS-232

Channel	LRU	Indicator	Status
CHNL 2	GMC 710	Green	PFD1/GMC 710 data path is functioning correctly.
		Red	PFD1/GMC 710 data path is not functioning correctly. • Verify GMC710 is powered on. o If GMC 710 will not power on, remove unit and verify power and ground are present at the GMC connector. ▪ If power or ground is not present, troubleshoot aircraft wiring for faults. ▪ If power and ground are present, replace GMC 710. • Load PFD1 and GMC 710 configuration files. • Swap PFD1and PFD2 to confirm if the problem is in the original PFD1. o Replace original PFD1 if box turns green after swapping displays. • Check the PFD1/GMC 710 interconnect wiring for faults. Replace GMC 710 if problem remains.
		Amber	PFD1/GMC 710 data path functionality is unknown. Reload PFD1 configuration file.

PFD 1 ARINC 429

Channel	LRU	Indicator	Status
IN 1	GRS 77 #1	Green	PFD1/GRS 77 #1 data path is functioning correctly.
		Red	PFD1/GRS 77 #1 data path is not functioning correctly. • Verify GRS77 #1 status is "OK" using the System Status page on the MFD. If it is not, correct condition before proceeding, reference GRS troubleshooting sections. o Swap GRS1 and GRS2 (no reconfiguration required) to confirm if the problem is in the original GRS1. o Replace original GRS1 if box turns green after swapping units. • Load PFD1 configuration file. • Swap PFD1 and PFD2 to confirm if the problem is in the original PFD1. o Replace original PFD1 if box turns green after swapping displays. • Swap GRS1 and GRS2 (no reconfiguration required) to confirm if the problem is in the original GRS1. o Replace original GRS1 if box turns green after swapping units. Check the PFD1/GRS 77 #1 interconnect wiring for faults.
		Amber	PFD1/GRS 77 #1 data path functionally is unknown. Reload PFD1 configuration file.
IN 2	GDC 74 #1	Green	PFD1/GDC 74 #1 data path is functioning correctly
		Red	PFD1/GDC 74 #1 data path is not functioning correctly. • Verify GDC 74 #1 status is "OK" using the System Status page on the MFD. If it is not, correct condition before proceeding, reference GDC troubleshooting sections. • Load PFD1 and GDC 74 #1 configuration files. • Swap PFD1 and PFD2 to confirm if the problem is in the original PFD1. o Replace original PFD1 if box turns green after swapping displays. • Check the PFD1/GDC 74 #1 interconnect wiring for faults. Replace GDC 74 #1 if problem remains.
		Amber	PFD1/GDC 74 #1 data path functionality is unknown. Reload PFD1 configuration file.

PFD 2 RS-232

Channel	LRU	Indicator	Status
CHNL 2	GMC 710	Green	PFD2/GMC 710 data path is functioning correctly.

		Red	PFD2/GMC 710 data path is not functioning correctly.
			• Verify GMC 710 is powered on.
			  o If GMC 710 will not power on, remove unit and verify power and ground are present at the GMC connector.
			  ▪ If power or ground is not present, troubleshoot aircraft wiring for faults.
			  ▪ If power and ground are present, replace GMC 710.
			• Load PFD2 and GMC 710 configuration files.
			• Swap PFD2 and PFD1 to confirm if the problem is in the original PFD2.
			  o Replace original PFD2 if box turns green after swapping displays.
			• Check the PFD2/GMC 710 interconnect wiring for faults.
			Replace GMC 710 if problem remains.

		Amber	PFD2/GMC 710 data path functionality is unknown. Reload PFD2 configuration file.

PFD 2 ARINC 429

Channel	LRU	Indicator	Status
IN 1	GRS 77 #2	Green	PFD2/GRS 77 #2 data path is functioning correctly.

		Red	PFD2/GRS 77 #2 data path is not functioning correctly.
			• Verify GRS77 #2 status is "OK" using the System Status page on the MFD. If it is not, correct condition before proceeding, reference GRS troubleshooting sections.
			  o Swap GRS1 and GRS2 (no reconfiguration required) to confirm if the problem is in the original GRS1.
			  o Replace original GRS1 if box turns green after swapping units.
			• Load PFD2 configuration file.
			• Swap PFD2 and PFD1 to confirm if the problem is in the original PFD2.
			  o Replace original PFD2 if box turns green after swapping displays.
			• Swap GRS1 and GRS2 (no reconfiguration required) to confirm if the problem is in the original GRS1.
			  o Replace original GRS1 if box turns green after swapping units.
			• Check the PFD2/GRS 77 #2 interconnect wiring for faults.

		Amber	PFD2/GRS 77 #2 data path functionality is unknown. Reload PFD2 configuration file.
IN 2	GDC 74 #2	Green	PFD2/GDC 74 #2 data path is functioning correctly.
		Red	PFD2/GDC 74 #2 data path is not functioning correctly. • Verify GDC 74 #2 status is "OK" using the System Status page on the MFD. If it is not, correct condition before proceeding, reference GDC troubleshooting sections. • Load PFD2 and GDC 74 #2 configuration files. • Swap PFD2 and PFD1 to confirm if the problem is in the original PFD2. o Replace original PFD2 if box turns green after swapping displays. • Check the PFD2/GDC 74 #2 interconnect wiring for faults. Replace GDC 74 #2 if problem remains.
		Amber	PFD2/GDC 74 #2 data path functionality is unknown. Reload PFD2 configuration file.

MFD1 RS-232

Channel	LRU	Indicator	Status
CHNL 1	GCU 477	Green	MFD1/GCU 477 data path is functioning correctly.

		Red	MFD1/GCU 477 data path is not functioning correctly.
			• Verify GCU 477 is powered on.
			  o If GCU 477 will not power on, remove unit and verify power and ground are present at the GCU connector.
			  ▪ If power or ground is not present, troubleshoot aircraft wiring for faults.
			  ▪ If power and ground are present, replace GCU 477.
			• Load MFD1 and GCU 477 configuration files.
			• Check the MFD1/GCU 477 interconnect wiring for faults.
			• Replace GCU 477.
			Replace MFD if problem remains.

		Amber	MFD1/GCU data path functionality is unknown. Reload MFD1 configuration file.

5.2.1.2 GIA RS-232 / ARINC 429 CONFIG Page

GIA1 RS-232

Channel	LRU	Indicator	Status
CHNL 1	GDC 74 #1	Green	GIA1/GDC 74 #1 data path is functioning correctly.
		Red	GIA1/GDC 74 #1 data path is not functioning correctly. • Load GIA1 and GDC 74 #1 configuration files. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. • Check the GIA1/GDC 74 #1 interconnect wiring for faults. Replace GDC 74 #1 if problem remains.
		Amber	GIA1/GDC 74 #1 data path functionality is unknown. Reload GIA1 configuration files.
CHNL 2	GRS 77 #2 (output only)	White N/A	GIA1/GRS 77 #2 output data path is not monitored. A white N/A box is normal.
CHNL 5	GTX 33ES #1 w/TIS	Green	GIA1/GTX 33 #1 data path is functioning correctly.
		Red	GIA1/GTX 33 #1 data path is not functioning correctly. • Load GIA1 and GTX 33 #1 configuration files. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. • Check the GIA1/GTX 33 #1 interconnect wiring for faults. Replace GTX 33 #1 if problem remains.
		Amber	GIA1/GTX 33 #1 data path functionality is unknown. Reload GIA1 configuration files.

GIA1 RS-232 (continued)

Channel	LRU	Indicator	Status
CHNL 6	GRS 77 #1	Green	GIA1/GRS 77 #1 data path is functioning correctly.
		Red	GIA1/GRS 77 #1 data path is not functioning correctly. • Load GIA1 configuration files. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. • Swap GRS1 and GRS2 (no reconfiguration required) to confirm if the problem is in the original GRS1. o Replace original GRS1 if box turns green after swapping units. Check the GIA1/GRS 77 #1 interconnect wiring for faults.
		Amber	GIA1/GRS 77 #1 data path functionality is unknown. Reload GIA1 configuration files.
CHNL 7	GMA 1347 #1	Green	GIA1/GMA 1347D #1 data path is functioning correctly.
		Red	GIA1/GMA 1347D #1 data path is not functioning correctly. • Load GIA1 and GMA 1347D #1 configuration files. • Swap GMA 1347D #1 and GMA 1347D #2, reconfigure both GMA's to their new locations, to confirm if the problem is in the original GMA 1347D #1. o Replace original GMA 1347D #1 if box turns green after swapping units. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. Check the GIA1/GMA 1347D #1 interconnect wiring for faults.
		Amber	GIA1/GMA 1347D #1 data path functionality is unknown. Reload GIA1 configuration files.

GIA1 ARINC 429

Channel	LRU	Indicator	Status
IN 5	GDC 74 #1	Green	GIA1/GDC 74 #1 data path is functioning correctly.
		Red	GIA1/GDC 74 #1 data path is not functioning correctly. • Load GIA1 and GDC 74 #1 configuration files. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. • Check the GIA1/GDC 74 #1 interconnect wiring for faults. Replace GDC 74 #1 if problem remains.
		Amber	GIA1/GDC 74 #1 data path functionality is unknown. Reload GIA1 configuration files.
IN 6	GRS 77 #1	Green	GIA1/GRS 77 #1 data path is functioning correctly.
		Red	GIA1/GRS 77 #1 data path is not functioning correctly. • Load GIA1 configuration files. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. • Swap GRS1 and GRS2 (no reconfiguration required, ref. GRS Configuration and Testing sections) to confirm if the problem is in the original GRS1. o Replace original GRS1 if box turns green after swapping units. Check the GIA1/GRS 77 #1 interconnect wiring for faults.
		Amber	GIA1/GRS 77 #1 data path functionality is unknown. Reload GIA1 configuration files.

GIA2 RS-232

Channel	LRU	Indicator	Status
CHNL 1	GDC 74B #2	Green	GIA2/GDC 74 #2 data path is functioning correctly.
		Red	GIA2/GDC 74 #2 data path is not functioning correctly. • Load GIA2 and GDC 74 #2 configuration files. • Swap GIA2 and GIA1, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA2 if box turns green after swapping units. • Check the GIA1/GDC 74 #2 interconnect wiring for faults. Replace GDC 74 #2 if problem remains.
		Amber	GIA2/GDC 74B #2 data path functionality is unknown. Reload GIA2 configuration files.
CHNL 2	GRS 77 #1 (output only)	White N/A	GIA2/GRS 77 #1 output data path is not monitored. A white N/A box is normal.
CHNL 5	GTX 33ES #2 w/TIS	Green	GIA2/GTX 33 #2 data path is functioning correctly.
		Red	GIA2/GTX 33 #2 data path is not functioning correctly. • Load GIA2 and GTX 33 #2 configuration files. • Swap GIA2 and GIA1, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA2 if box turns green after swapping units. • Check the GIA2/GTX 33 #2 interconnect wiring for faults. Replace GTX 33 #2 if problem remains.
		Amber	GIA2/GTX 33 #2 data path functionality is unknown. Reload GIA2 configuration files.

GIA2 RS-232 (continued)

Channel	LRU	Indicator	Status
CHNL 6	GRS 77 #2	Green	GIA2/GRS 77 #2 data path is functioning correctly.
		Red	GIA2/GRS 77 #2 data path is not functioning correctly. • Load GIA2 configuration files. • Swap GIA2 and GIA1, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA2 if box turns green after swapping units. • Swap GRS2 and GRS1 (no reconfiguration required) to confirm if the problem is in the original GRS2. o Replace original GRS2 if box turns green after swapping units. Check the GIA2/GRS 77 #2 interconnect wiring for faults.
		Amber	GIA2/GRS 77 #2 data path functionality is unknown. Reload GIA2 configuration files.
CHNL 7	GMA 1347D #2	Green	GIA2/GMA 1347D #2 data path is functioning correctly.
		Red	GIA2/GMA 1347D #2 data path is not functioning correctly. • Load GIA2 and GMA 1347D #2 configuration files. • Swap GMA 1347D #2 and GMA 1347D #1, reconfigure both GMA's to their new locations to confirm if the problem is in the original GMA 1347D #2. o Replace original GMA 1347D #2 if box turns green after swapping units. • Swap GIA2 and GIA1, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA2. o Replace original GIA2 if box turns green after swapping units. Check the GIA1/GMA 1347D #2 interconnect wiring for faults.
		Amber	GIA1/GMA 1347D #2 data path functionality is unknown. Reload GIA2 configuration files.

GIA2 ARINC 429

Channel	LRU	Indicator	Status
IN 5	GDC 74 #2	Green	GIA2/GDC 74 #2 data path is functioning correctly.
		Red	GIA2/GDC 74 #2 data path is not functioning correctly. • Load GIA2 and GDC 74 #2 configuration files. • Swap GIA2 and GIA1, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA2. o Replace original GIA2 if box turns green after swapping units. • Check the GIA2/GDC 74 #2 interconnect wiring for faults. Replace GDC 74 #2 if problem remains.
		Amber	GIA2/GDC 74 #2 data path functionality is unknown. Reload GIA2 configuration files.
IN 6	GRS 77 #2	Green	GIA2/GRS 77 #2 data path is functioning correctly.
		Red	GIA2/GRS 77 #2 data path is not functioning correctly. • Load GIA2 configuration files. • Swap GIA2 and GIA1, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA2. o Replace original GIA2 if box turns green after swapping units. • Swap GRS2 and GRS1 (no reconfiguration required) to confirm if the problem is in the original GRS2. o Replace original GRS2 if box turns green after swapping units. Check the GIA2/GRS 77 #2 interconnect wiring for faults.
		Amber	GIA2/GRS 77 #2 data path functionality is unknown. Reload GIA2 configuration files.

5.2.1.3 GIA CAN / RS-485 CONFIGURATION Page

GIA1 RS-485

Channel	LRU	Indicator	Status
CHNL 1	GEA1	Green	GIA1/GEA1 data path is functioning correctly.
		Red	GIA1/GEA1 data path is not functioning correctly. • Verify GEA1 is powered on using the GEA Status page. • Load GIA1 and GEA1 configuration files. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. • Swap GEA1 and GEA2, reconfigure both GEA's to their new locations to confirm if the problem is in the original GEA1. o Replace original GEA1 if box turns green after swapping units. Check the GIA1/GEA1 interconnect wiring for faults.
		Amber	GIA1/GEA1 data path functionality is unknown. Reload GIA1 configuration files.
CHNL 2	GEA2	Green	GIA1/GEA2 data path is functioning correctly.
		Red	GIA1/GEA2 data path is not functioning correctly. • Verify GEA2 is powered on using the GEA Status page. • Load GIA1 and GEA2 configuration files. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. • Swap GEA2 and GEA1, reconfigure both GEA's to their new locations to confirm if the problem is in the original GEA2. o Replace original GEA2 if box turns green after swapping units. Check the GIA1/GEA2 interconnect wiring for faults.
		Amber	GIA1/GEA2 data path functionality is unknown. Reload GIA1 configuration files.
CHNL 4	GFC 700	Green	GIA1/GFC 700 data path is functioning correctly.
		Red	GIA1/GFC 700 data path is not functioning correctly. • Load GIA1 configuration files, GIA Gains file and GSA software and gains file (if LRU and Card versions are different). Reference GFC section for further troubleshooting.
		Amber	GIA1/GFC 700 data path functionality is unknown. Reload GIA1 configuration files.

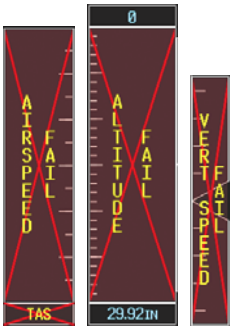
GIA2 RS-485

Channel	LRU	Indicator	Status
CHNL 1	GEA1	Green	GIA2/GEA1 data path is functioning correctly.
		Red	GIA2/GEA1 data path is not functioning correctly. • Verify GEA1 is powered on using the GEA Status page. • Load GIA2 and GEA1 configuration files. • Swap GIA2 and GIA1, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA2. o Replace original GIA2 if box turns green after swapping units. • Swap GEA1 and GEA2, reconfigure both GEA's to their new locations to confirm if the problem is in the original GEA1. o Replace original GEA1 if box turns green after swapping units. Check the GIA2/GEA1 interconnect wiring for faults.
		Amber	GIA2/GEA1 data path functionality is unknown. Reload GIA2 configuration files.
CHNL 2	GEA2	Green	GIA2/GEA2 data path is functioning correctly.
		Red	GIA2/GEA2 data path is not functioning correctly. • Verify GEA2 is powered on using the GEA Status page. • Load GIA2 and GEA2 configuration files. • Swap GIA2 and GIA1, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA2. o Replace original GIA2 if box turns green after swapping units. • Swap GEA2 and GEA1, reconfigure both GEA's to their new locations to confirm if the problem is in the original GEA2. o Replace original GEA2 if box turns green after swapping units. Check the GIA2/GEA2 interconnect wiring for faults.
		Amber	GIA2GEA2 data path functionality is unknown. Reload GIA2 configuration files.
CHNL 4	GFC 700	Green	GIA2/GFC 700 data path is functioning correctly.
		Red	GIA2/GFC 700 data path is not functioning correctly. • Load GIA2 configuration files, GIA Gains file and GSA software and gains file (if LRU and Card versions are different). Reference GFC section for further troubleshooting.
		Amber	GIA2/GFC 700 data path functionality is unknown. Reload GIA2 configuration files.

5.2.2 System Failure Troubleshooting

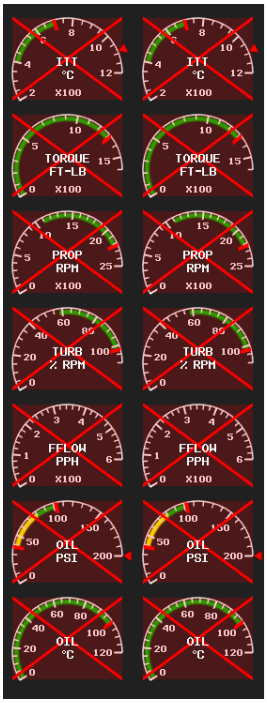
The following table provides basic troubleshooting guidance for LRU failures. Refer to G1000/GFC 700 Wiring Diagram, listed in Table 1-2, as needed to verify interconnects.

Invalid Data Field	Associated LRU(s)	Solution
Low Speed Awareness Band permanently displayed	GDU	• With aircraft weight on wheels and the G1000 in Configuration Mode, check that the RH GEAR ON GROUND Discrete In indication for GIA2, on GIA I/O CONFIGURATION page is illuminated. • With aircraft weight on wheels and the G1000 in Configuration Mode, check that the LH GEAR ON GROUND Discrete In indication for GIA1, on GIA I/O CONFIGURATION page is illuminated. • If both indications are illuminated Green, switch GIA1 and GIA2, to verify location of problem: ✓ If problem is resolved, replace defective unit. ✓ If indication is not illuminated, check for wiring faults between the GIAs and aircraft squat switch system.
Low Speed Awareness Band permanently inhibited	GDU	• With aircraft weight on wheels and the G1000 in Configuration Mode, check that the RH GEAR ON GROUND Discrete In indication for GIA2, on GIA I/O CONFIGURATION page is illuminated. • With aircraft weight on wheels and the G1000 in Configuration Mode, check that the LH GEAR ON GROUND Discrete In indication for GIA1, on GIA I/O CONFIGURATION page is illuminated. • If both indications are illuminated Green, switch GIA1 and GIA2, to verify location of problem: ✓ If problem is resolved, replace defective unit. ✓ If indication is not illuminated, check for wiring faults between the GIAs and aircraft squat switch system.
NAV1 & COM1	GIA1	• Check configuration settings for GIA1 and PFD1. • Swap GIA1 and GIA2, to verify location of problem: ✓ If problem follows GIA1, replace GIA1. • Check Ethernet interconnect from GIA1 to PFD1. ✓ If problem persists, replace PFD.
NAV2 & COM2	GIA2	• Check configuration settings for GIA2 and PFD2. • Swap GIA1 and GIA2, to verify location of problem: ✓ If problem follows GIA2, replace GIA2. • Check Ethernet interconnect from GIA2 to PFD2. ✓ If problem persists, replace PFD.

Invalid Data Field	Associated LRU(s)	Solution
GPS LOI 	GIA1 or GIA2	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Check GPS1 and GPS2 signal strength on AUX page 4. Refer to GIA GPS section if GPS can not acquire a position lock for troubleshooting. • Check corresponding GPS antenna and cable for faults. • Check Ethernet interconnect between the PFD1 to GIA1 or PFD2 to GIA2 for faults. • Swap GIA1 and GIA2, to verify location of problem: ✓ If problem follows the GIA, replace the GIA. ✓ If problem persists, replace the PFD1 or PFD2.
XPDR FAIL 	GTX 33	• Check GTX 33/33D configuration settings for GIA1 and GIA2. • Check GTX 33D/GIA1 interconnect. • Check GTX 33D/GIA2 interconnect. • Perform a SET>ACTV configuration reset on the GTX Config page for each GTX, and verify the aircraft registration is present. • Replace GTX 33/33D. ✓ If problem persists, replace GIA.
TAS FAIL AIRSPEED FAIL ALTITUDE FAIL VERT SPEED FAIL 	GDC 74B	• Inspect GDC 74B pitot/static plumbing integrity. • Inspect pitot/static ports and associated equipment for faults. • For TAS failure, also check GTP 59 probe. • Check GDC 74B configuration settings for the PFDs, MFD, GIA1, and GIA2. ✓ If PFDs, MFD, and GIA configuration settings are correct, replace the GDC configuration module. ✓ If problem persists, replace the GDC 74B.
OAT 	GTP 59	• Check OAT probe wiring and connectors for faults. • Check GDC config module wiring for damage, replace if any is found. • Replace GDC config module • Replace GDC 74B with a known good unit: ✓ If problem persists, replace the GTP 59.

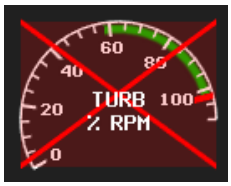
Invalid Data Field	Associated LRU(s)	Solution
ATTITUDE FAIL 	GRS 77	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Cycle GRS 77 power to restart initialization. • Ensure GRS 77 connecter is secure and proper wire harness strain relief is provided. • Ensure the GRS 77 is fastened down tightly in it's mounting rack and that the mounting rack is not loose (CAUTION - do not loosen the mounting rack hardware to the airframe shelf or the aircraft will need to be re-leveled and the PITCH/ROLL OFFSET procedure performed). • Ensure GPS has acquired at least four satellites, has a 3D navigation solution, and a DOP of less than 5.0. This is particularly important for an ATTITUDE FAIL that appears during ground operation only. • Perform an Engine Run-Up Test to check if engine vibration is causing the GRS 77 to go offline. • Load configuration files to the PFD, MFD, GIA1, and GIA2. • Calibrate the GRS 77 (Pitch/Roll Offset and Magnetometer Calibration). • Replace GRS 77. ✓ If problem persists replace GRS 77 configuration module. ✓ Contact Garmin Aviation Product Support if condition continues after replacing the GRS 77 and config module for additional assistance.

Invalid Data Field	Associated LRU(s)	Solution
HDG FAIL 	GRS 77 & GMU 44	• Ensure metal objects (tool boxes, power carts, etc.) are not interfering with the magnetometer and aircraft is not in hangar, near other buildings, parked over metal drainage culverts or on hard surfaces that may contain steel reinforcements • Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Cycle power after moving aircraft away from metal objects to determine if metal objects were the source of the interference. Allow up to five minutes for the heading to reinitialize. • Perform a Magnetometer Interference Test to check for interference from onboard electrical system components (e.g. NAV lights). Pay particular attention to any new electrical devices that have been installed since the aircraft was new. Correct any discrepancies that do not allow this test to pass before continuing. • Ensure GRS 77 and GMU 44 connectors are secure. • Check the wiring and any inline connectors between the GRS and GMU for faults. • Recalibrate the GMU 44, • Load configuration files to the PFD1, PFD2, GIA1, and GIA2 ✓ If problem persists replace the GMU 44. ✓ If problem persists, replace the GRS 77.
 	GRS 77 & GMU 44	• If this message persists longer than five minutes, perform AHRS calibration procedures as described in Section 7.7.3.

Invalid Data Field	Associated LRU(s)	Solution
Engine/Airframe Sensors (All Invalid)  	GEA 71 & GIA 63W	• If software was loaded to a new GDU display, be sure that the user settings for the replaced display were cleared. Clear user settings by pressing the CLR key on the replaced display while applying power to it. Acknowledge the on-screen prompt by pressing the ENT key or the right-most softkey. • Check for GEA related Alert messages on the PFD. Correct any Alerts concerning software or configuration errors by reloading software or configuration as noted. • Verify GEA internal power supply, configuration, and calibration status in configuration mode. ✓ The internal power supply, configuration and calibration boxes should be green. If they are red, replace the GEA 71. • Verify internal, external, and reference voltages listed in the Main Analog and I/O A Analog boxes are not dashed out (does not include Aircraft Power 1 and 2). ✓ If any voltages are dashed out, replace the GEA. • Ensure the GEA is online (green checkmark on the AUX – SYSTEM STATUS page). ✓ If GEA is not online verify unit is receiving power at the rack connector. ✓ Check the GIA/GEA interconnects for faults. ✓ Reload configuration files to both GIA's and the GEA. • If problem persists, replace the GEA 71.

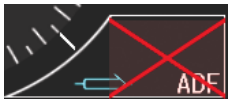
5.2.3 Engine/Airframe Instrument Failures

The following table provides guidance for troubleshooting individual engine/airframe sensor failures. Be sure to also follow previous guidance given for the GEA 71. The technician should troubleshoot to isolate the fault by checking sensor-to-GEA wiring, replacing the suspect sensor, and finally by replacing the GEA 71. Replace one part at a time. Refer to Section 7.4.1 to check for correct operation of the sensors and GEA 71 after any part has been replaced. Refer to G1000/GFC 700 Wiring Diagram and King Air 200 Series Maintenance Manual (listed in Table 1-2) as needed.

Invalid Field	Sensor	Possible Solutions (for applicable engine/system)
	ITT	• Check thermocouple cable. • Replace thermocouple cable. • Replace GEA 71.
	Torque	• Check torque transmitter – GEA wiring. • Check power input to torque transmitter. • Replace torque transmitter. • Replace GEA 71.
	Prop RPM	• Check prop tachometer – Signal Conditioner wiring. • Check Signal Conditioner – GEA wiring. • Check power input to Signal Conditioner. • Replace prop tachometer sensor. • Replace Signal Conditioner. Refer to Section 6.22. • Replace GEA 71.
	Turbine RPM	• Check engine speed tachometer – Signal Conditioner wiring. • Check Signal Conditioner – GEA wiring. • Check power input to Signal Conditioner. • Replace engine speed tachometer sensor. • Replace Signal Conditioner. Refer to Section 6.22. • Replace GEA 71.
	Fuel Flow	• Check Signal Conditioner unit wiring. • Check power input to Signal Conditioner • Replace fuel flow transmitter. • Replace Signal Conditioner. Refer to Section 6.22. • Replace GEA 71.
	Oil Pressure	• Check oil pressure sensor – GEA wiring. • Replace oil pressure sensor. • Replace GEA 71.
	Oil Temperature	• Check oil temperature sensor – GEA wiring. • Replace oil temperature sensor. • Replace GEA 71.

5.2.4 ADF/DME Failure

A DME or ADF failure is represented by the following red X's. Refer to G1000/GFC 700 Wiring Diagram and King Air 200 Series Maintenance Manual (listed in Table 1-2,) as needed.

Invalid Field	Sensor	Solutions
  	ADF	• Ensure that GIA 63 #2 is properly functioning. • Reload the ADF option configurations. • Check for proper operation of the ADF receiver. Ensure that the receiver is receiving power. • Check ADF – GIA2 interconnect. • For other failures of the ADF system, refer to King Air 200 Series Maintenance Manual, listed in Table 1-2.
 	DME	• Ensure that GIA 63 #1 is properly functioning. • Reload the DME option configurations. • Check for proper operation of the DME receiver. Ensure that the receiver is receiving power. • Check DME – GIA1 interconnect. • For other failures of the DME system, refer to the King Air 200 Series Maintenance Manual, listed in Table 1-2.

5.3 200/B200 Specific Alerts

The following alerts are configured specifically for the King Air 200/B200 installation:

ANNUNCIATION ADVISORY Alerts

Message Advisory	Solution
TAWS GEAR FAULT – Landing Gear detected in the DOWN position	• Check the gear down wiring input to the GIAs. Refer to G1000/GFC 700 Wiring Diagram, listed in Table 1-2.
TAWS FLAP FAULT – Flaps detected in the LDG position	• Check the flap full down wiring input to the GIAs. Refer to G1000/GFC 700 Wiring Diagram, listed in Table 1-2.
WOW Invalid	• Ensure that the GIA1 (PRI) and (SEC) and GIA2 circuit breakers are closed. • Check weight on wheels switch inputs to GIA1 and GIA2. Refer to G1000/GFC 700 Wiring Diagram, listed in Table 1-2,
WOW Fault	• Ensure that the GIA1 (PRI) and (SEC) and GIA2 circuit breakers are closed. • Check weight on wheels switch inputs to GIA1 and GIA2. Refer to G1000/GFC 700 Wiring Diagram, listed in Table 1-2.
AVN 1 FAN FAIL – Avionics cooling fan #1 is inoperative.	• Ensure that the PFD/GIA FAN (LEFT and RIGHT) and MFD FAN circuit breakers are closed. • Check cooling fan wiring. Refer to G1000/GFC 700 Wiring Diagram, listed in Table 1-2, • Replace cooling fan. Refer to Sections 6.28 and 6.29.
AVN 2 FAN FAIL – Avionics cooling fan #2 is inoperative.	
PFD 1 FAN FAIL – PFD #1 cooling fan is inoperative.	
PFD 2 FAN FAIL – PFD #2 cooling fan is inoperative.	
MFD FAN FAIL – MFD cooling fan is inoperative.	
ESP FAIL – ESP is inoperative.	Troubleshoot the GFC 700 AFCS. Refer to Section 5.5.
ESP OFF – ESP selected off.	• Check that the MFD AUX-SYSTEM SETUP 2 page shows “Stability & Protection” status is “ENABLED”.
ESP DEGRADE – ESP AOA mode is inoperative.	• Ensure GIA units are operational and GPS satellites have been acquired. • Ensure STALL WARN circuit breaker is closed. • Troubleshoot Safe Flight lift computer. Refer to Section 5.25.
ESP DEGRADE - ESP IAS mode is inoperative.	• Ensure ADC1 and ADC2 circuit breakers are closed and units are providing valid airspeed data.
ESP CONFIG – ESP config error. Config service req’d.	• Ensure that the “ESP Support Option” has been installed per Section 3.20. • Ensure that the “Enhanced AFCS unlock card” has been installed per Section 3.34. • If the ESP option needs to be removed, reload the baseline configuration for the specific airframe and all applicable options as described in Section 3.9. Reloading the baseline configuration disables all previously enabled options.

NOTE

From this point forward, all message advisory alerts presented are common to all G1000 systems and are not specific to the King Air 200/B200. Messages are grouped according to LRU.

5.4 TAWS Troubleshooting

Annunciation	Cause	Solution
TAWS FAIL	A TAWS system failure has occurred.	• If message occurred on the first power up after unlocking TAWS, cycle power to initialize TAWS. • Ensure each GDU contains the correct database data card. • Ensure the G1000 is configured for TAWS: ✓ If the system is not configured for TAWS, reconfigure per Section 3.9.6. • Verify GIAs are online. • Ensure a database or GDU SW mismatch has not occurred. ✓ If a mismatch has occurred, load correct database/software files or replace the terrain card.
TAWS TEST	TAWS system is currently being tested.	N/A – Test will be conducted up to two minutes
TAWS INHB	TAWS system alerting is disabled	Enable TAWS system alerting by pressing the INHIBIT softkey on the MAP – TAWS page.
TAWS N/A	GPS system integrity not high enough to enable TAWS	• Ensure valid GPS position is received from the AUX – GPS STATUS page. • Check GPS antenna & associated coaxial cabling. • Troubleshoot GIAs.
GPWS FAIL	A GPWS system failure has occurred.	• Verify GIAs are online. • Verify radio altimeter input is valid. • Verify baro altitude and vertical speed input are valid.

5.5 Synthetic Vision and Pathways Troubleshooting

The SVS/Pathways software feature requires the following G1000 sensors/data to be valid:

- AHRS
- Heading
- GPS Position
- 9 Arc-Second Terrain Data

In the event that one the above items fails or is unavailable, the SVS/Pathways feature is automatically removed from the PFD. The following table describes possible symptoms associated with the SVS/Pathways feature, and provides corresponding actions for troubleshooting:

Table 5-1, SVS Troubleshooting

Symptom	Recommended Action
"SYN VIS" softkey does not appear on PFD softkey tier.	Follow the steps in Section 3.33 to reactivate the SVS/Pathways feature.
3D terrain presentation does not appear on PFD.	Verify that P/N 010-00330-43 terrain datacards are installed in the lower slot of the PFD and MFD. Verify that the alert messages shown in Table 5-2 are not displayed on the PFD Alerts Window. If so, follow the solutions described in Table 5-2. Verify that the G1000 AHRS and heading data are valid on the PFD. Verify that a valid GPS 3D position solution is being received. Troubleshoot these systems in accordance with sections 5.10.4 and 5.15. If a terrain database update has just been performed, allow the system time to initialize and verify the data. When the databases have been verified, the current database cycle and version are reported on the MFD AUX – System Status page.

The following table provides SVS/Pathways specific alert messages which may appear in the Alerts Window on the PFD (press the ALERTS softkey on the PFD to view the Alerts Window):

Table 5-2, SVS-Related Alert Messages

Failure Message	Cause	Solution
SVS – SVS DISABLED: Out of available terrain region.	SVS is disabled because the aircraft exceeded the boundaries of the loaded terrain database.	Geographical operation limitations are defined in the AFMS listed in Table 1-2. Ensure that operations are within this geographic area.
SVS – SVS DISABLED: Terrain DB resolution too low	SVS is disabled because a 9 Arc-Second or better database is not currently loaded.	Ensure the P/N 010-00330-43 Terrain Cards are installed in the lower slot of each display. If terrain data has been recently updated, ensure that the correct 9 Arc-Second databases were used.

5.5.1 General Troubleshooting

The following annunciations may appear in the AFCS Annunciation field:

Table 5-3, AFCS Annunciation Troubleshooting

Annunciation	Condition	Resolution
AFCS	AFCS System Failure	• Confirm AFCS Servos circuit breaker IN • Ensure that the G1000 system is in proper working order. Check specifically for proper operation of the: ✓ GIA 63 Integrated Avionics Units ✓ GRS 77 AHRS Units ✓ GDC 74B Air Data Computers ✓ All GSA 80 Servos • Check that no red X's are present on the MFD and PFD displays. • Check that no related alert messages are present on the PFD displays (press the ALERTS softkey). • Go to the AUX SYSTEM STATUS page on the MFD and verify that all LRUs have a 'green' check (see Section 5). • In Configuration mode, review the GFC 700 equipment status, software, and certification gains. • Reload software, configuration, and certification gains to the GIAs and GSA 80 servos. • Check the GFC Status page for additional GFC 700 system information. • Review the fault and assert logs for the GIAs and servos (see Section 5.6.2) • Isolate the fault to an LRU. Replace this LRU and confirm the resolution of the annunciation.
PTCH	Pitch Axis Failure	• Check the AUX – SYSTEM STATUS page to see if the servo is online (green check). • Check that the affected servo is receiving power. • Check the servo wiring and connector. • For pitch trim, check pitch trim switch operation to verify switch contacts are not stuck. • If failure condition still exists, remove and replace the affected servo.
PTRM	Pitch Trim Axis Failure	
YAW	Yaw Axis Failure	
ROLL	Roll Axis Failure	
CHECK ATTITUDE	AHRS Monitor Failure	• If the AHRS inputs have been determined to be "unreasonable" while the AP is engaged, in air, this message will be displayed until AHRS inputs are determined reasonable for 5 seconds.
↓ELE	Elevator Mis-Trim Down	• If elevator mistrim annunciations persist, check the pitch and pitch trim servos for proper operation. Verify that the servo is online at the AUX – SYSTEM STATUS page. • Check the servo wiring and connectors. Ensure the servo is receiving power. • Check the aircraft control adjustments. • If mistrim condition still exists, remove and replace the affected servo.
↑ELE	Elevator Mis-Trim Up	

Annunciation	Condition	Resolution
	Aileron Mistrim Right	• Check for possible fuel imbalance. • Check aileron control adjustments. • If mistrim condition still exists remove and replace the roll servo.
	Aileron Mistrim Left	
	Rudder Mistrim Right	• Check rudder control adjustments. • If mistrim condition still exists remove and replace the yaw servo.
	Rudder Mistrim Left	
	Pre-Flight Test Fails	• Allow the system to complete pre-flight tests. • The preflight test should finish within 2 minutes. If it does not pass, the red 'PFT' annunciation is shown. In case of PFT failure, see Section 5.6.3 for additional PFT diagnostics.

Table 5-4, AFCS General Troubleshooting

Condition	Resolution
Poor AP Performance (Limited AP Authority)	• Check each servo gearbox slip clutch per Section 4.9. Verify the clutches are not excessively loose and are within torque limits. • Check aircraft controls for proper balancing and adjustment per the King Air 200 Series Maintenance Manual. • Check aircraft control cables for proper tension per the King Air 200 Series Maintenance Manual.
AP DISC Problems	• For intermittent nuisance disconnects with no AFCS of PFT alert, check A/P disconnect switch and wiring for intermittent faults. • If an AFCS or PFT alert is displayed at the time of the disconnect, troubleshoot per Section 5.5. • Check the GIA AFCS Fault Logs according to Section 5.6.2. If a **Mon Prmtr Invalid** message is received, check for valid true airspeed. A faulty GTP 59 OAT probe may cause TAS to become invalid, which will flag the **Mon Prmtr Invalid** message. • Contact Garmin Product Support for assistance
Loss of Manual Electric Trim	• Check pitch trim servo status. • Check MET switch discrete inputs to both GIAs by going to the GIA I/O Configuration page and selecting DISCRETE IN inputs.
AutoTrim Inoperative	• Check flap-in-motion discrete inputs to both GIAs for proper operation by going to the GIA I/O Configuration page and selected DISCRETE IN inputs. See Section 4.8. • If DATA indicator fails to illuminate or illuminates incorrectly, troubleshoot flap motor & discrete input wiring (refer to G1000/GFC 700 Wiring Diagram, listed in Table 1-2,).

5.6 GFC 700 AFCS Troubleshooting

The GFC 700 is a digital Automatic Flight Control System (AFCS) which is integrated into various components of the G1000. This section touches upon key items to note while troubleshooting the GFC 700.

Should a problem be encountered during the operation of the GFC 700, the pilot and technician should first evaluate the overall status and condition of the G1000 system at the AUX – System Status page (on MFD). Any alert messages, annunciations, or other abnormal behaviors should be noted in an effort to pinpoint the fault. The object is to locate the fault within a LRU or LRUs in efforts to replace the defective equipment.

The GFC 700 AFCS Annunciation field is located above the airspeed tape on the PFD as shown:

Figure 5-5, AFCS Annunciation Field

5.6.1 GFC Status Page

The GFC Status page is presented in configuration mode and gives status information regarding the GFC 700.

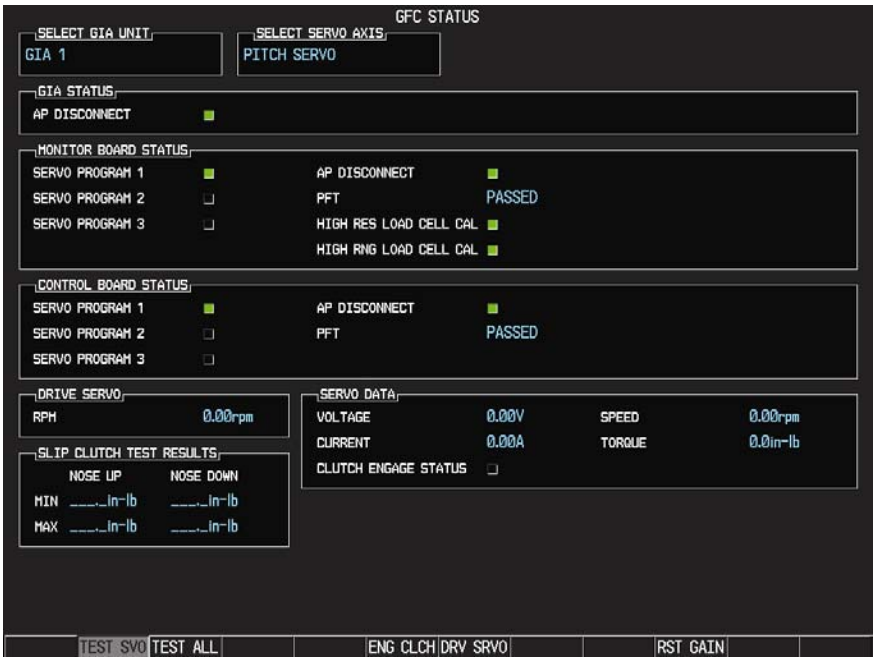


Figure 5-6, GFC Status Page

GIA STATUS

AP DISCONNECT: Shows the condition of the AP DISC +28 VDC input to the GIAs and servos, which is required for the Autopilot to operate. A green status indicator shows the AP DISC switch is closed and the GFC 700 is activly receiving 28. volts. A red X indicates the GIAs and servos are no longer receiving the +28 VDC AP DISC power (switch open or other fault).

MONITOR/CONTROL BOARD STATUS

Shows the condition of various monitor board components.

SERVO PROGRAM (1-3): Servo program discretes are used to determine the HW strapping for each GSA to define the servo type. This information can be cross-referenced against the system interconnects to verify proper servo grounding.

AP DISCONNECT: Same as GIA Status.

PFT: Indicates whether the pre-flight test has passed or failed.

HIGH RES & HIGH RNG LOAD CELL CAL: Shows the condition of the high resolution and high range load cells on the monitor board. If box is black, this indicates a corrupt or missing load cell calibration; return the servo to Garmin.

DRIVE SERVO

Allows the technician to enter a desired RPM at which to manually drive the selected servo. Direction of rotation is controlled by the polarity of the RPM (+ or -). After the speed is entered, the technician may use the ENG CLCH and DRV SRVO softkeys to drive the servo.

NOTE

Be especially certain that the flight controls are clear and safe to operate before manually driving the servo.

SERVO DATA

Shows real-time reported data including servo voltage, speed, motor current, load cell torque, and clutch solenoid status. A green box indicates the servo clutch is engaged.

SLIP CLUTCH TEST RESULTS

This window is used during the automatic slip clutch torque measurement check.

5.6.2 GIA Fault Log Descriptions

The section was created to help determine why the GFC 700 has failed the Pre-Flight Test indicated by the red PFT annunciation

, it defines the PFT sequence for the servos and the GFC 700 system and then provides troubleshooting information to help resolve failures.

There are 16 steps to the GFC 700 PFT. The PFT is performed by both GIA's at startup, and needs to pass on both GIA's before the autopilot can be engaged.

The PFT is only started if the AHRS has aligned, the GIA's and servos are configured and the certification gains are valid. If the PFT has not completed after one minute from when the initialization started, the PFT will fail. After the system PFT has passed, it will be performed again if a servo resets, if the autopilot servo breaker is reset or the cross side GIA restarts it.

Generally, the PFT failure fault is logged in the GIA Maintenance Log and not in the Servo Maintenance Logs unless the GIA log fault identifies a servo problem.

NOTE

Thoroughly understanding the operation of the G1000 system in Configuration mode is recommended before starting this procedure. The GFC Status page may be used to check the status of the servos and engage them to aid in troubleshooting

To access the GIA and GSA Maintenance Logs, perform the following steps –

1. Start the G1000 in Configuration mode.
2. Use the FMS knob on PFD1 to go to the Diagnostics Terminal page in the System group. This page allows the technician to view maintenance logs associated with the GFC 700.
3. Choose 'GIA 1' or 'GIA 2' in the LRU window.
4. In the SERVO window, choose 'NONE' to view the GIA Maintenance Log, or choose a servo to view their logs.
5. Using the FMS knob, choose 'VIEW MAINTENANCE LOG' in the COMMAND window.
6. Press the ENT key.
7. When the Maintenance Log data starts to display in the OUTPUT window, you may see "More...press any key to continue..." at the bottom of the OUTPUT window. This informs you there is more data to display and the system has paused allowing you to view the data before continuing. To see more of the data, reselect the "VIEW MAINTENANCE LOG" in the COMMAND window and press the ENT key. The "...press any key to continue..." function is not active at this time.
8. Scroll through the OUTPUT list by pressing the OUTPUT softkey.

9. The GIA Maintenance Log can record any of the following faults:

- **FCS Task not started: Bad gains**

The FCS task has not started because the gains are not present or have been corrupted.

Reload the gain files to correct.

- **FCS Task not started: Gain structure out of range**

The FCS task has not started because the gains are not compatible with the GIA software.

Reload the gain files to correct.

- **PFT FAIL: Timeout, <STEP>**

Pre-flight test has failed because the specified step has not passed in the allotted time. See the GIA pre-flight steps for a description of the possible values for **<STEP>** on the failed GIA and corrective actions.

- **PFT FAIL: Cross GIA Failed, State: <STEP>**

Pre-flight test has failed on opposite GIA. **<STEP>** specifies the pre-flight test step on selected GIA that was in progress when the pre-flight test failed on the opposite GIA. See the GIA pre-flight steps for a description of the possible values for **<STEP>** on the failed GIA and corrective actions.

- **PFT FAIL: <STEP>**

Pre-flight has failed because the step specified has failed. See the GIA pre-flight test steps for a description of the possible values for **<STEP>** on the failed GIA and corrective actions.

- **AHRS MON invalid: <STATE>**

The AHRS monitor has detected that the AHRS data is invalid. The possible values for **<STATE>** are:

a. **Mon Prmtr Invalid:** The ARINC 429 data used by one of the monitors has not been received.

b. **Attitude Prmtr Invalid:** The ARINC 429 pitch or roll angle has not been received.

c. **Exceeded Attitude Limits:** The pitch or roll angle has exceeded the engagement limits.

d. **Cross Hdg Accel Fail:** Cross heading acceleration monitor failed.

e. **Vert Accel Fail:** Vertical acceleration monitor failed.

f. **Fltrd Cross Hdg Accel Fail:** Filtered cross heading acceleration monitor failed.

g. **Fltrd Vert Accel Fail:** Filtered vertical acceleration monitor failed.

h. **Roll Accel Fail:** Roll acceleration monitor has failed.

i. **Normal Accel Fail:** Normal acceleration has failed.

Troubleshoot the GRS 77 for the cause of the failure.

- **Stuck switch invalidated parameter: <AXIS>**

A MET switch in the specified axis is stuck.

Check the MET (trim) switches for proper operation.

- **PRMTR: <PARAMETER> MODE:<MODE> Parameter lost**

The mode specified by **<MODE>** has been disengaged because the parameter specified by **<PARAMETER>** has become invalid. The following is a list of some of the possible values for **<PARAMETER>:**

a. **AD TDM Comm Valid:** The specified mode has been disengaged because communication with the servos, via the Time Division Multiplexer protocol, has been lost.

b. **AP Pitch MET not stuck:** The specified mode has been disengaged due to a stuck pitch MET switch.

Check the MET (trim) switches for proper identification.

5.6.3 GIA Pre-Flight Test Steps

PFT step 0: System initialization, verify GFC powered

This step is checking to make sure the GFC is powered up. It checks to make sure the GIA AP disconnect input is connected to 28 volts, and makes sure the Servos are up and communicating.

If this step fails, make sure the GIA is connected to AP disconnect by using the GFC configuration page. Also make sure all configured Servos are communicating by checking for Servo product data in configuration mode.

PFT step 1: System initialization, verify GIA audio is valid.

This step is checking to make sure that the GIA audio region has been loaded and configured.

If this step fails, load GIA audio region and audio configuration.

PFT step 2: System initialization, verify required servos are configured

This step is checking to make sure the current Servo configuration matches the Servo configuration specified in the certification gain file.

If this step fails, then make sure the Servo configuration on the GFC configuration page matches the Servo configuration specified in the configuration gain (.cgn) file.

PFT step 3: System initialization, verify selected side

This step is checking to make sure the PFD1 is online and sending the selected AFCS side data over HSDB to GIA1.

If this step fails, then make sure the PFD is powered up and there is an Ethernet connection from the PFD to the GIA.

PFT step 4: System initialization, verify AHRS monitor

This step is checking to make sure the AHRS monitor is valid and not reporting an AHRS failure. NOTE: AHRS monitor will be assumed valid if on the ground.

If this step fails, then make sure the AHRS and ADC is powered up and sending valid attitude data to the G1000.

PFT step 5: System initialization, verify servo PFT is complete

This step is checking to make sure that all servos have completed their own PFT. This does not check whether the servo PFT passed or failed. It verifies that the servo PFT is no longer in progress.

PFT step 6: Verify cross GIA is initialized

This step is checking to make sure the other GIA is also on step 6 of its PFT.

If this step fails, try cycling power on GIA1, GIA2, and all servos. If PFT still fails at step 6 then you will need to go check the PFT status of the other GIA and see what step it is failing (it should be prior to step 6). NOTE: The PFT status is communicated between GIA1 and GIA2 using HSDB. As a result, both the PFD and MFD must be powered for this state to pass.

PFT step 7: Verify servo type

This step is checking to make sure the Servos are the correct type (torque and speed).

If this step fails, make sure the Servo configuration on the GFC configuration page matches the Servos installed in the aircraft.

PFT step 8: Verify servo first certification data

This step is checking to make sure the servos have the same certification gains loaded in them as the GIAs have.

If this step fails, reload the certification gains in GIA1, GIA2, and all servos.

PFT step 9: Verify servo second certification data

This step is checking to make sure the servos have the same certification gains loaded in them as the GIAs have.

If this step fails, reload the certification gains in GIA1, GIA2, and all servos.

PFT step 10: Updating servo RTC

This step is setting the system time in the servos to by the same time as the GIA system time.

This step should never fail.

PFT step 11: Verify servo PFT status

This step is checking to make sure the servos have all passed their own PFT.

If this step fails, please proceed to servo PFT explanation below.

PFT step 12: Verify AP disconnect enabled

This step is checking to make sure GIA1, GIA2, and all servos have are connected to a 28 volt AP disconnect.

If this step fails, make sure the AP disconnect input to GIA1, GIA2, and all servos is connected and registering 28 volts. Make sure the AP disconnect switch has been installed in the aircraft. Make sure no one is holding the AP disconnect switch down on the yoke.

PFT step 13: Verify servo validity

This step is checking to make sure all the Servos are up and communicating with valid data to the GIA in TDM mode.

If this step fails, then make sure all Servos are turned on and communicating by checking for green boxes on the GFC configuration page.

PFT step 14: Verify cross GIA PFT is completed

This step is checking to make sure the other GIA is also on step 14 of its PFT.

If this step fails, try cycling power on GIA1, GIA2, and all servos. If PFT still fails at step 14 then you will need to go check the PFT status of the other GIA and see what step it is failing. NOTE: The PFT status is communicated between GIA1 and GIA2 using HSDB. As a result, both the PFD and MFD must be powered for this state to pass.

PFT step 15: PFT completed

The PFT has successfully completed.

PFT step 16: PFT failed

The PFT has failed.

5.6.3.1 Servo Faults and Troubleshooting

Whenever a servo fault occurs, a status message is logged to the corresponding servo control or monitor maintenance log. This information is also accompanied by a time and date stamp. An "RTC DATE" entry is made every time a servo is powered on, it is normally not useful for troubleshooting.

The following is a listing of possible faults that could be reported in a GSA fault log. Faults can occur in either the monitor board processor or the control board processor, both of which are contained in the GSA unit.

Monitor Processor

The monitor processor contains the logs that are found in these processors -

2 – Pitch Servo

4 – Roll Servo

6 - Yaw

8 – Pitch Trim Servo

There are two main groupings of faults that can occur in the monitor processor:

The first grouping of faults can occur during the GSA unit pre-flight test (PFT). If there is a fault during PFT the unit will not be able to transition to normal mode and the only way to clear this state would be to cycle unit power.

The second grouping of faults can occur during normal mode. These faults generally cause a disconnect of power to the GSA and report that a fault has occurred to the GIA.

The Notes column indicates any actions that can be taken to troubleshoot the problem in the aircraft by the technician. Any faults that are not listed here indicate an internal problem requiring replacement of the servo. If the items in the Notes column check out ok, replace the servo.

PFT Faults

MONITOR PFT STEP	NOTES
"INTERNAL COMM FAIL"	This can sometimes be a result of a failure on the other internal servo board, check faults on the other processor
"UNSW POWER INV"	Check unit power
"MON SOL PWR ON FAIL"	Check unit power and AP Disconnect power
"CTL SOL PWR ON FAIL"	Check unit power and AP Disconnect power
"SOL PWR FAIL"	Check unit power and AP Disconnect power
"CERT DATA UNINSTALLED"	Upload the certification gain file to the Monitor board
"STRAP CODE MISMATCH"	Check the connector strap inputs to the unit

Normal Mode Faults

MONITOR FAULT	NOTES
"GIA DIS FAULT"	Check the AP Disconnect power into the unit
"HOST DATA DIF"	Check the AHRS wiring to the system
"HOST DATA INV"	Check the AHRS wiring to the system
"SVO PWR INV"	Check unit power and AP Disconnect power
“STRP CODE CHNG”	Check the connector strap inputs to the unit
“MET STUCK SWTCH”	Check the MET switch inputs into the system
“MET STATUS DIF”	Check the MET switch inputs into the system

Control Processor

The control processor contains the logs that are found in these processors –

3 – Pitch Servo

5 – Roll Servo

7 - Yaw

9 – Pitch Trim Servo

There are two main groupings of faults that can occur in the control processor.

The first grouping of faults can occur during the GSA unit pre-flight test (PFT). If there is a fault during PFT the unit will not be able to transition to normal mode and the only way to clear this state would be to cycle unit power.

The second grouping of faults can occur during normal mode. These faults generally cause a disconnect of power to the GSA and report that a fault has occurred to the GIA.

The Notes column indicates any actions that can be taken to troubleshoot the problem in the aircraft by the technician. Any faults that are not listed here indicate an internal problem requiring replacement of the servo. If the items in the Notes column check out ok, replace the servo.

PFT Faults

CONTROL PFT STEP	NOTES
"INT COMM TEST FAIL"	This can sometimes be a result of a failure on the other board, check faults on other processor
"CTL MOT PWR ON FAIL"	Check unit power and AP Disconnect power
"MON MOT PWR ON FAIL"	Check unit power and AP Disconnect power
"HALL 1 FAIL"	Check unit power and AP Disconnect power
"HALL 2 FAIL"	Check unit power and AP Disconnect power
"HALL 3 FAIL"	Check unit power and AP Disconnect power
"HALL 4 FAIL"	Check unit power and AP Disconnect power
"HALL 5 FAIL"	Check unit power and AP Disconnect power
"HALL 6 FAIL"	Check unit power and AP Disconnect power
"CURR OFFST FAIL"	Check unit power and AP Disconnect power
"SVO TYPE FAIL"	Check unit power and AP Disconnect power
"CERT DATA UNINSTALLED"	Upload the certification gain file to the Control board
"STRAP CODE MISMATCH"	Check the connector strap inputs to the unit

Normal Mode Faults

CONTROL FAULT	NOTES
"GIA DIS FAULT"	Check the AP Disconnect power into the unit
"HOST DATA DIF"	Check the AHRS wiring to the system
"HOST DATA INV"	Check the AHRS wiring to the system
"SVO PWR INV"	Check unit power and AP Disconnect power
“STRP CODE CHNG”	Check the connector strap inputs to the unit
“MET STUCK SWTCH”	Check the MET switch inputs into the system
“MET STATUS DIF”	Check the MET switch inputs into the system

5.6.3.2 Downloading GIA and GSA Maintenance Logs

If additional assistance is needed troubleshooting autopilot faults, the Maintenance logs can be downloaded to an SD card as a text file (.txt) and emailed to Garmin Aviation Product Support. Please call Garmin Aviation Product Support before you send a Maintenance Log to notify them you are sending it to prevent a delay in response. You may download multiple GIA and GSA Maintenance Logs to the same file, however in your email to Garmin you must furnish the order in which they were downloaded (i.e. GIA1, then GIA2, then SRVO PTCH MON, then SRVO PTCH CTL, etc.).

1. Insert a FAT 32 formatted SD card into the top slot of the PFD before turning on the displays.
2. Power up PFD1, PFD2 and MFD in the configuration mode.
3. On the PFD1 in the System page group, use the small FMS knob to scroll to the Diagnostics Terminal page.
4. Press the LG2CRD softkey at the bottom of the PFD1. Verify that the softkey text grays out. This indicates the recording function is active and all text that is displayed in the OUTPUT window will be saved to the card.
5. Enable the cursor by pressing the FMS knob, select "GIA1" in the LRU drop down menu and then press the ENT key to select it.
6. Skip the SERVO box and move the cursor to the COMMAND box and select "View Maintenance Log" in the drop down menu then press the ENT key. The error log data will be displayed in the OUTPUT box. If you see the "more…press any key to continue" text at the bottom of the screen, you may need to reselect "View Maintenance Log" for GIA data to allow it to continue scrolling down the screen (pressing any key will not continue, disregard the text instruction you to do so). Continue to scroll through all the OUTPUT data until you see the text, "End of Fault Log".
7. Move the curser back to the LRU box, select "GIA2" in the LRU drop down menu and then press the ENT key to select it.
8. Skip the SERVO box and move the cursor to the COMMAND box and select "View Maintenance Log" in the drop down menu then press the ENT key. The error log data will be displayed in the OUTPUT box. If you see the "more…press any key to continue" text at the bottom of the screen, you may need to reselect "View Maintenance Log" for GIA data to allow it to continue scrolling down the screen (pressing any key will not continue, disregard the text instruction you to do so). Continue to scroll through all the OUTPUT data until you see the text, "End of Fault Log".
9. If you need to download Servo fault logs (usually done at the request of Garmin Product Support), perform the following steps. Otherwise, skip to step 10.
    a) In the LRU box, you may select either "GIA1" or "GIA2".
    b) In the SERVO box, choose a servo using the FMS knobs. Each servo contains two logs, one in the Monitor (MON) processor and one in the Control (CTL) processor. You must download both for each servo separately.
    c) In the COMMAND box, select "View Maintenance Log" and press the ENT key.
    d) The log will appear in the OUTPUT box. It will scroll to the end automatically. When it is complete, repeat steps a-c for the other servos in the aircraft. Be sure to note the order the servos were downloaded in including the Monitor or Control logs to email to Garmin Product Support. Without knowing the order in which the logs were downloaded, Garmin will be unable to process them and will ask for another full download.
10. Press the LG2CRD softkey to turn off the recording function.
11. Wait 1 minute for the system to save the data from the download to the SD card.

12. While you are waiting for the data to be saved to the SD card, record the order of the LRU's and/or Servos were downloaded so that you can provide that information to Cessna or Garmin to help decipher the order of the error data.
13. Power down the G1000 System and remove the SD card.
14. Insert the SD card in the card reader of a laptop or desktop computer and open the "diag_buf_log.txt" file from the SD card using the WordPad program. Verify that all of the fault logs were downloaded by checking for the "End of Fault Log" message at the end of the GIA data, and that the last servo log entry has the current date.
15. Insert the fault log as an attachment to an email and include the LRU order how the data was downloaded and send to Garmin Aviation Product Support at avionics@Garmin.com.

5.7 Backup Communications Path Checks

5.7.1 Overview

The G1000 system architecture is designed with redundant communication ports for several LRUs so that critical information can continue to be displayed in the event of an equipment or wiring failure. Of most importance is flight attitude, heading, and air data information. The GRS 77 and GDC 74B each have four separate ARINC 429 data lines which are all capable of sending data to the displays. The GEA 71, GTX 33(D), and GMA 1347D each have two redundant serial communication paths for the same purpose. See Figure 2-21 for a basic G1000 block diagram depicting this architecture. Several other diagrams are shown later in this section for illustrative purposes. When troubleshooting, refer to the G1000/GFC 700 Wiring Diagram listed in Table 1-2.

NOTE:

Refer to Section 8.1.6 for procedures on checking the status of each configured G1000 / GFC 700 backup data path.

5.7.2 Data Path Failures

Failure Message	Cause	Solutions
FAILED PATH – A data path has failed.	A communications data path status is not being received by the G1000.	Determine which data path has failed: See Section 8.1.6. Check wiring continuity for the failed path. Swap or replace the affected LRU.

5.8 GDU 104X Troubleshooting

5.8.1 GDU 104X Common Problems

Symptom	Recommended Action
Display is blank	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Cycle power. ✓ If GDU recovers, observe display for yellow text containing error information at the top of the screen. If message indicates software need to be re-loaded, then re-load software. Otherwise, replace the GDU.
Display resets	• Use a bright light to verify LCD is active. ✓ Adjust avionics dimmer control full clockwise. ✓ Manually turn up backlight on the PFD and load configuration files to the GDU. • Ensure slide lock is fully engaged with the locking tabs on the back of the unit. ✓ If slide lock is not fully engaged, remove connector and verify the locking tabs on the GDU are perpendicular to the connector. If necessary, straighten them before reseating connector.
Display flickers	• Ensure GDU is receiving power. If a circuit breaker is tripped, determine source of short before resetting breaker. • Ensure circuit breakers have not failed and power wire connections are secure. • Swap PFD1 and PFD2. ✓ If problem follows unit, replace the display. Please note the position it failed in (PFD1/2). ✓ If problem does not follow unit, troubleshoot aircraft wiring for fault.
SD card is stuck in GDU	• DO NOT insert a screwdriver of any length into the card slot. • DO NOT pry against the overlay. • DO NOT force the SD Card out. • Use a small screwdriver in the groove on the side of the exposed end of the card to help pull out the card. • Push the card in further to release the card locking mechanism. • Check SD Card for having more than one label. Two or more labels on the card will cause sticking. ✓ Remove all but one label. • Ensure the SD card is from Toshiba or SanDisk. Use of other SD Cards is not recommended. • If card was inserted with the label facing to the right, do not attempt to remove. Return the unit to Garmin for repair.
A button/knob/joystick does not appear to function	• Go to the GDU TEST page in configuration mode and verify button, knob, or joystick operates correctly by observing a change in color from red to green in the button/knob/joystick icon when the button/knob/joystick is pressed. If a button is stuck, the button icon will be green without pressing the button as soon as you turn to the GDU TEST page. ✓ If problem is verified, replace GDU.

Symptom	Recommended Action
Terrain/Obstacle/Safetaxi does not display	• Ensure supplemental data cards are inserted correctly in the lower slots of all three GDU's. • Allow the system to verify the data on the cards for approximately five minutes after power-up. • If a database does not activate, reload the problem database onto the SD Card or replace the card.
Display will not track dimmer bus	• Reload GDU configuration files. • If display is a PFD, swap PFD1 and PFD2 to see if problem remains with display. ✓ Replace display if condition remains with the same unit. ✓ If condition remains in original position after swapping displays, check GDU dimmer input to verify voltage is present. • If display is the MFD, check dimmer input to verify voltage is present. ✓ Replace MFD if dimmer voltage is present.
Keyboard will not track dimmer bus	

5.9 GDU 104X Alerts

5.9.1 Software/Configuration Alerts

Failure Message	Cause	Solution
SW MISMATCH – GDU software version mismatch. Xtalk is off.	The system has found the PFDs and/or MFD software versions do not match.	• Load correct software version. See Section 3.9 for GDU 1040 Software Loading procedure.
MANIFEST – PFD 1 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in the specified PFD.	
MANIFEST – PFD 2 software mismatch. Communication Halted.		
MANIFEST – MFD1 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in MFD.	
CNFG MODULE – PFD 1 configuration module is inoperative.	The PFD master configuration module has failed.	• Check master configuration module connector and wiring for damage inside the GDU connector backshell. ✓ Replace master configuration module wiring and pins. ✓ If problem persists, replace master configuration module. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other cards will no longer work as they will remain locked to the old System ID number.

Failure Message	Cause	Solution
MFD1 CONFIG – MFD1 configuration error. Config service req'd.	A configuration mismatch has occurred between the display and the Master Configuration Module.	• Reload the display configuration files from SD Loader Card. • Reload system configuration files by pressing the UPDT CFG softkey on the Configuration Upload Page in the PFD1 System Page Group to load configuration files into the configuration module. ✓ If message persists, check PFD1 config module wiring for faults and replace if necessary. ✓ If issue continues, replace PFD1 master configuration module. ✓ If problem persists, replace the display. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other cards will no longer work as they will remain locked to the old System ID number.
PFD 1 CONFIG – PFD 1 configuration error. Config service req'd.		
PFD 2 CONFIG – PFD 2 configuration error. Config service req'd.		

5.9.2 Database Alerts

Failure Message	Cause	Solution
MFD1 DB ERR – MFD1 aviation database error exists.	The MFD or specified PFD has encountered an error in the Jeppesen aviation database.	• Reload aviation database into the display. • Contact Garmin Technical Support for assistance.
PFD 1 DB ERR – PFD 1 aviation database error exists.		
PFD 2 DB ERR – PFD 2 aviation database error exists.		
MFD1 DB ERR – MFD1 terrain database error exists.	The MFD has encountered an error in the terrain database.	• Confirm supplemental data card is inserted fully. • Reload the database or replace the supplemental datacard. • Contact Garmin product Support for further assistance if needed.
PFD 1 DB ERR – PFD 1 terrain database error exists.	The specified PFD has encountered an error in the terrain database.	
PFD 2 DB ERR – PFD 2 terrain database error exists.		
MFD1 DB ERR – MFD1 obstacle database error exists.	The MFD has encountered an error in the obstacle database.	• Confirm supplemental data card is inserted fully. • Reload the database or replace the supplemental datacard. • Contact Garmin product Support for further assistance if needed.
PFD 1 DB ERR – PFD 1 obstacle database error exists.	The specified PFD has encountered an error in the obstacle database.	
PFD 2 DB ERR – PFD 2 obstacle database error exists.		
MFD1 DB ERR – MFD1 airport terrain database error exists.	The MFD has encountered an error in the airport terrain database.	• Confirm supplemental data card is inserted fully. • Reload the database or replace the supplemental datacard. • Contact Garmin product Support for further assistance if needed.
PFD 1 DB ERR – PFD 1 airport terrain database error exists.	The specified PFD has encountered an error in the airport terrain database.	
PFD 2 DB ERR – PFD 2 airport terrain database error exists.		
DB MISMATCH – Aviation database version mismatch. Xtalk is off.	The system has found the Jeppesen aviation database cycles in the PFDs and/or MFD do not match.	• Load current aviation database versions to all displays.
DB MISMATCH – Aviation database type mismatch. Xtalk is off.	The system has found the Jeppesen aviation database types in the PFDs and/or MFD do not match (i.e., different regions: Americas, International, Atlantic, etc)	• Load same type aviation database to all displays.

Failure Message	Cause	Solution
DB MISMATCH – Airport Terrain database version mismatch. Xtalk is off.	The PFDs and/or MFD have different Airport Terrain database versions installed.	• Confirm supplemental data card is inserted fully. • Reload the database or replace the supplemental datacard.
DB MISMATCH – Terrain database version mismatch.	The PFDs and/or MFD have different terrain database versions installed.	
DB MISMATCH – Obstacle database version mismatch.	The PFDs and/or MFD have different obstacle database versions installed.	
DB MISMATCH – Terrain database type mismatch.	The PFDs and/or MFD have different terrain database types installed (i.e., different regions: Americas, International, Atlantic, etc).	

5.9.3 Cooling Alerts

Failure Message	Cause	Solution
MFD1 COOLING – has poor cooling. Reducing power usage.	MFD1 has exceeded its operating temperature range.	• Check cooling fan and wiring for proper operation (if applicable). ✓ Replace cooling fan if unable to determine if operating correctly. ✓ If problem persists, replace the MFD. • If problem continues contact Garmin Aviation Product Support for assistance.
PFD 1 COOLING – has poor cooling. Reducing power usage.	PFD 1 has exceeded its operating temperature range.	• Check cooling fan and wiring for proper operation (if applicable). ✓ Replace cooling fan if unable to determine if operating correctly. ✓ If problem persists, replace the PFD1. • If problem continues contact Garmin Aviation Product Support for assistance.
PFD 2 COOLING – has poor cooling. Reducing power usage.	PFD 2 has exceeded its operating temperature range.	• Check cooling fan and wiring for proper operation (if applicable). ✓ Replace cooling fan if unable to determine if operating correctly. ✓ If problem persists, replace the PFD2. • If problem continues contact Garmin Aviation Product Support for assistance.

5.9.4 Key Alerts

Failure Message	Cause	Solution
MFD1 “key” KEYSTK – key is stuck.	The SYSTEM has determined a key is stuck on MFD1.	• Go to the GDU TEST page in configuration mode and verify key is stuck (if key is stuck the corresponding indicator will be green). • Exercise suspected stuck key and reset GDU TEST page to see if indicator remains green without pressing the key. ✓ If problem persists replace the display.
PFD 1 “key” KEYSTK – key is stuck.	The system has determined a key is stuck on the PFD 1.	
PFD 2 “key” KEYSTK – key is stuck.	The system has determined a key is stuck on the PFD 2.	

5.9.5 Miscellaneous Alerts

Failure Message	Cause	Solution
XTALK ERROR – A flight display cross talk error has occurred.	A communication error has occurred between the MFD and/or PFDs.	• Ensure a database error has not occurred (identified in the ALERTS window on the PFD). ✓ If a database error has occurred, correct error before proceeding. • Check display Ethernet interconnect wiring. • Replace PFD1 with a known good unit, to verify location of problem: ✓ If problem persists, reinstall original PFD1 and replace PFD2. ✓ If problem persists, reinstall PFD2 and replace MFD.
DATA LOST – Pilot stored data lost. Recheck settings.	Pilot stored data has been lost.	• If the CLR key was held during a power cycle, disregard message. • Cycle power to PFD1: ✓ Ensure CLR key is not stuck on the GDU TEST page. ✓ If problem persists, replace PFD1.

Failure Message	Cause	Solution
MFD1 SERVICE – needs service. Return unit for repair.	The G1000 has determined MFD1 needs service.	• Ensure the MFD connector is fully seated and locked. • If the unit was started in a very dark environment the photocells may not have enough light to initially raise the CCFT level. Go to the GDU STATUS page in configuration mode, ensure CCFT CRNT 1 & 2 levels are above 50. ✓ If the CCFT levels are not above 50, apply light to the photocell and observe if the CCFT level rises. ✓ If the CCFT level rises, disregard the message. ✓ If the CCFT level does not rise, replace the MFD • Replace the MFD
PFD 1 SERVICE – needs service. Return unit for repair.	The G1000 has determined the specified PFD needs service.	• Ensure the PFD connector is fully seated and locked. • If the unit was started in a very dark environment the photocells may not have enough light to initially raise the CCFT level. Go to the GDU STATUS page in configuration mode, ensure CCFT CRNT 1 & 2 levels are above 50. ✓ If the CCFT levels are not above 50, apply light to the photocell and observe if the CCFT level rises. ✓ If the CCFT level rises, disregard the message. ✓ If the CCFT level does not rise, replace the PFD • Replace the PFD.
PFD 2 SERVICE – needs service. Return unit for repair.		
PFD 1 VOLTAGE – PFD 1 has low voltage. Reducing power usage.	The specified PFD supply voltage is low.	• Check input voltage to PFD. • If input voltage is ok, replace PFD.
PFD 2 VOLTAGE – PFD 2 has low voltage. Reducing power usage.		
MFD1 VOLTAGE – MFD1 has low voltage. Reducing power usage.	The MFD supply voltage is low.	• Check input voltage to MFD. • If input voltage is ok, replace MFD.

5.9.6 GMA Common Problems

Symptom/Failure Message	Recommended Action
Noise in Audio	Most often the cause of the noise is external to the GMA. Try the following to locate the source of the noise before replacing the GMA: • Try a different pair of headsets. Noise cancelling headsets may pick up and/or generate more noise than standard headsets from their own circuitry. • Check for noise with the engine turned off. ✓ If the noise is present only when the engine is running, check the generator and/or ignition system as possible sources of noise (see applicable airframe specific maintenance manual). • Check for noise as all electrical equipment is turned on and off (strobes, other radios, etc.). ✓ If the noise is identified from one electrical system or component refer to the applicable airframe specific maintenance manual. • Ensure the NAV/COM squelch is not open. • Ensure the ADF and DME audio is not active. • Ensure the marker beacon audio is not active. • Ensure the ICS squelch is not open. ✓ Master squelch level can be adjusted on the GMA CONFIGURATION page for higher noise environments. • Replace unit only after all possible external sources of noise are eliminated.
Buttons Do Not Work.	• Some buttons are disabled in the GMA CONFIGURATION page by default. This is to remove potential sources of audio noise for inputs that are not used. If in doubt as to which buttons should be disabled, reload GMA config files and other config files for optional equipment installed in the aircraft (i.e. ADF, HF, etc.) from the loader card.
COM Bleedover	• Verify on the GMA CONFIGURATION page that “Disable Split COM” has a green box. Due to the closeness of the COM antennas and high power of the COM transceivers, Split COM operation is not approved. If the box is black (indicating COM ½ button is active), highlight “Disable Split COM” with the cursor and press the ENT key to turn the box green which will deactivate Split COM mode.
Speaker Cuts Out	• Reduce volume level of the item that caused the speaker to cut out when turned up. A speaker protection circuit disables the speaker output if the volume is too high. If the volume is not sufficient, replace aircraft cabin speaker, reference the Airframe Maintenance Manual.
Mic Audio Heard in Speaker	• Reduce ICS Volume.
GMA XTALK – GMA crosstalk error has occurred.	• Ensure both GMA units are receiving power. • Ensure both units are properly configured by verifying there are no GMA alert messages. • Check interconnect wiring between the GMA’s for faults. • Replace GMA1. • If problem persists, reinstall GMA1 and replace GMA2.

5.9.7 GMA Alerts

Failure Message	Cause	Solution
GMA1 SERVICE – GMA1 needs service. Return unit for repair. GMA2 SERVICE – GMA2 needs service. Return unit for repair.	The system has determined that the specified GMA 1347D needs service.	• Replace GMA .
GMA1 FAIL – GMA1 in inoperative. GMA2 FAIL – GMA2 in inoperative.	The system has detected a failure in the specified GMA 1347D.	• Ensure GMA1 is receiving power. • Ensure both GIAs are receiving power. • Ensure all GDUs are receiving power. • Ensure the GMA/GIA RS-232 data lines are working properly. • Ensure the GIA/GDU Ethernet data lines are working properly. Replace GMA1.
MANIFEST – GMA1 software mismatch. Communication Halted. MANIFEST – GMA2 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in the specified GMA 1347D.	Load the correct unit software. See Section 3.9 for the Software Loading procedure.
GMA1 CONFIG – GMA1 configuration error. Config service req'd. GMA2 CONFIG – GMA2 configuration error. Config service req'd.	The system has detected a GMA 1347D configuration mismatch for the specified unit.	• Load GMA configuration files, see Section 3.9. • Replace GMA. • If problem persists, replace master configuration module, check config module wiring for faults and replace if necessary. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other cards will no longer work as they will remain locked to the old System ID number.

5.10 GIA 63 Troubleshooting

5.10.1 COM

Symptom	Recommended Action
Weak COM transmit power	• Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows unit, replace GIA. ✓ If problem does not follow unit, check COM antenna and cabling for faults.
Weak COM receiver	• Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows unit, replace GIA. ✓ If problem does not follow unit, check COM antenna and cabling for faults.
No COM sidetone	• Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows unit, replace GIA. ✓ If problem persists, replace GMA1 with a known good unit. ✓ If problem persists, reinstall original GMA1 and replace GMA2.

5.10.2 NAV

Symptom	Recommended Action
Weak NAV receiver	• Set up a NAV/COM Ramp Test Set to radiate a test signal. • Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows unit, replace GIA. ✓ If problem does not follow unit, check NAV antenna, coupler, and cabling for faults.

5.10.3 G/S

Symptom	Recommended Action
Weak G/S receiver	• Set up a NAV/COM Ramp Test Set to radiate a test signal. • Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows unit, replace GIA. ✓ If problem does not follow unit, check NAV antenna, coupler, and cabling for faults.

5.10.4 GPS

Symptom	Recommended Action
Will Not Acquire Satellites	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Using the MFD AUX – GPS Status page, verify the signal strength bars are not erratic. If so, this indicates outside interference is affecting the GPS receivers. Find and remove the source of interference (i.e. cell phones, FBO datalink antennas, etc.). • Check date and time on Date/Time Setup Page. ✓ If date and time are incorrect, enter the correct date and time. • Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows unit, clear the GPS almanac by performing the following steps – o Using the PFD in config mode, go to the GIA RS-232/ARNIC 429 Config Page. o At the top of the screen, select the GIA that can not acquire satellites (GIA1 or GIA2) and press the ENT key. o Press the “CLR NV” softkey at the bottom of the screen. o Select “OK” in the “Clear GIA nonvolatile memory?” pop-up window. o Next reload GIA Audio and Config files from a loader card, see Section 4.3 and on for instructions. Be sure to reload the config files for any optional equipment installed on the aircraft that require the GIA config to be updated. • Cycle power on the system and allow it to restart in normal mode. Place the aircraft outside and allow 15-30 minutes for the GPS to acquire a position and download a new almanac. ✓ If clearing nonvolatile memory is unsuccessful and the GPS still can not acquire a position, replace the GIA. ✓ If problem does not follow unit, check GPS antenna and cabling.

5.11 GIA Alert Messages

5.11.1 COM Alerts

Failure Message	Cause	Solutions
COM1 SERVICE – COM1 needs service. Return unit for repair.	The system has determined COM1 needs service.	• Replace GIA1 according to instructions in Section 6.
COM2 SERVICE – COM2 needs service. Return unit for repair.	The system has determined COM2 needs service.	• Replace GIA2 according to instructions in Section 6.
COM1 PTT – COM1 push-to-talk key is stuck.	The COM1 external push-to-talk (PTT) switch is stuck in the enabled (or “pressed”) state.	• Press the push-to-talk switch(s) again to cycle its operation. • Check push-to-talk switch(s) and wiring. • Check GIA1/GMA 1347D #1 interconnect. • Switch GIA1 and GIA2, to identify whether the unit or connectors/wiring is at fault (Both GIAs must be configured when swapped; see Section 3.9): ✓ If problem follows the unit, replace GIA1. ✓ If problem persists replace defective GMA 1347D #1.
COM2 PTT – COM2 push-to-talk key is stuck.	The COM2 external push-to-talk (PTT) switch is stuck in the enabled (or “pressed”) state.	• Press the push-to-talk switch(s) again to cycle its operation. • Check push-to-talk switch(s) and wiring. • Check GIA2/GMA 1347D #2 interconnect. • Switch GIA1 and GIA2, to identify whether the unit or connectors/wiring is at fault (Both GIAs must be configured when swapped, see Section 3.9): ✓ If problem follows the unit, replace GIA2. ✓ If problem persists replace defective GMA 1347D #2.

Failure Message	Cause	Solutions
COM1 RMT XFR – COM1 remote transfer key is stuck.	The COM1 external remote transfer switch is stuck in the enabled (or “pressed”) state.	Press the COM1 external remote transfer switch again to cycle its operation. Check COM1 external remote transfer switch and wiring. Switch GIA1 and GIA2, to identify whether the unit or connectors/wiring is at fault (Both GIAs must be configured when swapped, see Section 3.9) ✓ If problem follows the unit, replace GIA1. ✓ If problem persists, continue to troubleshoot remote transfer switch & wiring.
COM2 RMT XFR – COM2 remote transfer key is stuck.	The COM2 external remote transfer switch is stuck in the enabled (or “pressed”) state.	Press the COM2 external remote transfer switch again to cycle its operation. Check COM2 external remote transfer switch and wiring. Switch GIA1 and GIA2, to identify whether the unit or connectors/wiring is at fault (Both GIAs must be configured when swapped, see Section 3.9): ✓ If problem follows the unit, replace GIA2. ✓ If problem persists, continue to troubleshoot remote transfer switch & wiring.
COM1 TEMP – COM1 over temp. Reducing transmitter power.	The specified COM transceiver is reporting a high temperature condition and is reducing transmit power to prevent damage.	• Check fan, wiring and air tubing for proper operation (if applicable). • Replace cooling fan if unable to determine if operating correctly. • Replace GIA. • If problem persists contact Garmin Aviation Product Support for assistance.
COM2 TEMP – COM2 over temp. Reducing transmitter power.		

5.11.2 NAV Alerts

Failure Message	Cause	Solution
NAV1 SERVICE – NAV1 needs service. Return unit for repair.	The system has detected a failure in NAV1 receiver.	• Replace GIA1.
NAV2 SERVICE – NAV2 needs service. Return unit for repair.	The system has detected a failure in NAV2 receiver.	• Replace GIA2.
NAV1 RMT XFR – NAV1 remote transfer key is stuck.	The NAV1 external remote transfer switch is stuck in the enabled (or “pressed”) state.	Press the NAV1 external remote transfer switch again to cycle its operation. Check NAV1 remote transfer switch and wiring. Switch GIA1 and GIA2, to identify whether the unit or connectors/wiring is at fault (Both GIAs must be configured when swapped, see Section 3.9): ✓ If problem follows unit, replace GIA1. ✓ If problem persists, continue to troubleshoot remote transfer switch & wiring.
NAV2 RMT XFR – NAV2 remote transfer key is stuck.	The NAV2 external remote transfer switch is stuck in the enabled (or “pressed”) state.	Press the NAV2 external remote transfer switch again to cycle its operation. Check NAV2 remote transfer switch and wiring. Switch GIA1 and GIA2, to identify whether the unit or connectors/wiring is at fault (Both GIAs must be configured when swapped, see Section 3.9): ✓ If problem follows unit, replace GIA1. ✓ If problem persists, continue to troubleshoot remote transfer switch & wiring.

5.11.3 Glideslope Alerts

Failure Message	Cause	Solution
G/S1 SERVICE – G/S1 needs service. Return unit for repair.	The system has detected a failure in G/S1 receiver.	• Replace GIA1.
G/S2 SERVICE – G/S2 needs service. Return unit for repair.	The system has detected a failure in G/S2 receiver.	• Replace GIA2.
G/S1 FAIL – G/S1 is inoperative.	The system has detected a failure in G/S1 receiver.	• Switch GIA1 and GIA2 to verify location of problem: ✓ If problem follows the unit, replace GIA. ✓ If problem does not follow unit, check G/S1 antenna and cabling.
G/S2 FAIL – G/S2 is inoperative.	The system has detected a failure in G/S2 receiver.	• Switch GIA1 and GIA2 to verify location of problem: ✓ If problem follows the unit, replace GIA. ✓ If problem does not follow unit,. check G/S2 antenna and cabling.

5.11.4 GPS Alerts

NOTE

Before troubleshooting, ensure that no cell phones or devices using cell phone technology are turned on, even in a monitoring state, in the cabin.

Failure Message	Cause	Solution
MANIFEST – GPS1 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in GIA1.	• Load the correct GPS software. See Section 3.9 for the Software Loading procedure.
MANIFEST – GPS2 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in GIA2.	
GPS1 SERVICE – GPS1 needs service. Return unit for repair.	The system has detected a failure in GPS1 receiver.	• Replace GIA.
GPS2 SERVICE – GPS2 needs service. Return unit for repair.	The system has detected a failure in GPS2 receiver.	
GPS1 FAIL – GPS1 is inoperative.	The system has detected a failure in GPS1 receiver.	• Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows the unit, replace GIA. ✓ If problem does not follow the unit, check GPS antenna and cabling.
GPS2 FAIL – GPS2 is inoperative.	The system has detected a failure in GPS2 receiver.	

Failure Message	Cause	Solution
LOI – GPS integrity lost. Crosscheck with other NAVS.	If the primary receiver is a WAAS sensor, the alert indicates that GPS position data has timed out.	• Verify the area the aircraft was traveling through did not have loss of GPS coverage. FAA NOTAMs may be issued for periods of outages, or the US Coast Guard website http://www.navcen.uscg.gov/gps/gpsnotices/default.htm will have notices posted. • Using the MFD AUX – GPS Status page, verify the signal strength bars are not erratic. If so, this indicates outside interference is affecting the GPS receivers. Find and remove the source of interference (i.e. cell phones, FBO datalink antennas, etc.). • If GPS receivers can not aquire a position lock, troubleshoot per the "Will not acquire satellites" section.
GPS NAV LOST – Loss of GPS navigation. Insufficient satellites.	There is no GPS position fix available or the system is in dead reckoning mode.	
GPS NAV LOST – Loss of GPS navigation. Position error.	The G1000 has detected an internal position warning has occurred.	
GPS NAV LOST – Loss of GPS navigation. GPS fail.	The G1000 has detected a GPS engine failure.	

5.11.5 GIA Cooling Alerts

Failure Message	Cause	Solution
GIA1 COOLING – GIA1 temperature too low.	GIA1 operating temperature is too low.	• Allow unit to warm up.
GIA2 COOLING – GIA2 temperature too low.	GIA2 operating temperature is too low.	• Allow unit to warm up.
GIA1 COOLING – GIA1 over temperature.	GIA1 has exceeded its operating temperature range.	• Check fan, wiring and air tubing for proper operation (if applicable). • Replace cooling fan if unable to determine if operating correctly. • Replace GIA1. • If problem persists contact Garmin Aviation Product Support for assistance.
GIA2 COOLING – GIA2 over temperature.	GIA2 has exceeded its operating temperature range.	• Check fan, wiring and air tubing for proper operation (if applicable). • Replace cooling fan if unable to determine if operating correctly. • Replace GIA2. • If problem persists contact Garmin Aviation Product Support for assistance.

5.11.6 GIA Configuration Alerts

Failure Message	Cause	Solution
MANIFEST – GIA1 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in GIA1.	• Load the correct software. See Section 3.9 for the Software Loading procedure.
MANIFEST – GIA2 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in GIA2.	
GIA1 CONFIG – GIA1 audio config error. Config service req'd.	The GIA's audio configuration files are incorrect or missing.	• Reload audio configuration files.
GIA2 CONFIG – GIA2 audio config error. Config service req'd.		
GIA1 CONFIG – GIA1 configuration error. Config service req'd.	The system has detected a GIA configuration mismatch. If GIAs are not properly configured after being swapped/replaced, this message appears.	• Load the configuration files for that GIA. See Section 3.9 for GIA 63 Configuration Loading procedure. • If problem persists, replace master configuration module, check config module harness for faults and replace if necessary. **NOTE** • New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other cards will no longer work as they will remain locked to the old System ID number.
GIA2 CONFIG – GIA2 configuration error. Config service req'd.		
HW MISMATCH – GIA hardware mismatch, GIA1 communication halted.	The G1000 has detected a non-WAAS GIA 63.	• Replace GIA with a WAAS unit.
HW MISMATCH – GIA hardware mismatch, GIA2 communication halted.		
GIA1 SERVICE – GIA1 needs service. Return unit for repair.	The G1000 has detected a failure in the specified GIA.	• Replace suspect GIA.
GIA2 SERVICE – GIA2 needs service. Return unit for repair.		

5.12 GEA Troubleshooting

5.12.1 GEA Alerts

Failure Message	Cause	Solution
MANIFEST – GEA1 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the specified GEA 71.	Load the correct software verion. See Section 3.9 for GEA 71 Software Load Procedure.
MANIFEST – GEA2 software mismatch. Communication halted.		
GEA1 CONFIG – GEA1 configuration error. Config service req'd.	The system has detected a configuration mismatch in the specified GEA 71.	• Load GEA configuration files. See Section 3.9 for GEA 71 Configuration Procedure. • If problem persists, replace master configuration module, check config module harness for faults and replace if necessary. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other cards will no longer work as they will remain locked to the old System ID number.
GEA1 CONFIG – GEA2 configuration error. Config service req'd.		

5.13 GTX Troubleshooting

5.13.1 GTX Alerts

Failure Message	Cause	Solutions
MANIFEST – GTX1 software mismatch. Communication halted. MANIFEST – GTX2 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the specified GTX 33.	• Reload software. See Section 3.9 for the Software Load Procedure.
XPDR1 CONFIG – XPDR1 configuration error. Config service req'd. XPDR2 CONFIG – XPDR2 configuration error. Config service req'd.	The system has detected a configuration mismatch for the specified GTX 33.	• Perform a SET>ACTV configuration reset on the GTX Config page and verify the aircraft registration is present. • If error is still present, reload config files from a loader card. ✓ If problem persists, replace master configuration module, check config module harness for faults and replace if necessary. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other cards will no longer work as they will remain locked to the old System ID number.
XPDR1 SRVC – XPDR1 needs service. Return unit for repair. XPDR2 SRVC – XPDR2 needs service. Return unit for repair.	The G1000 has detected a failure in the specified GTX 33.	• Replace GTX 33.
XPDR1 FAIL – XPDR 1 is inoperative. XPDR2 FAIL – XPDR 2 is inoperative.	The specified GTX 33 is not responding.	• Check wiring between GIA's and GTX. • Replace GTX 33.

5.14 GDL 69A Troubleshooting

5.14.1 GDL 69A Common Problems

Symptom	Recommended Action
No XM audio is heard	• Ensure the following items are not preventing the audio panel from distributing XM audio (reference applicable G1000 Pilot's Guide): ✓ Verify the XM volume is not muted on the AUX – XM RADIO page on the MFD. ✓ Verify the COM squelch is not open. ✓ Verify the ICS squelch is not open. ✓ Verify the marker beacon tones are not being received. ✓ Verify the headphone (if equipped) volume is turned up. • Go to the AUX – SYSTEM STATUS page on the MFD and ensure unit is online. ✓ If a red X is present, verify the unit is receiving power at the rack connector. • Ensure there are no GDL alerts in the alert window. If there is an Alert for software or configuration error or mismatch, reload the file noted in the Alert. • Restart the PFD's and MFD in configuration mode and go to the GDL page.
No XM weather information is displayed	✓ Verify unit is active. ✓ Verify the Signal number is "2" or "3". If it is "0" or "1" check the GDL 69/69A antenna and cabling for faults. ✓Reseat the GDL 69/69A to verify the coax connector is fully seated. ✓ If unit is not active, contact XM Customer service to have a refresh signal sent to your unit. You will need to provide them the Audio Radio ID (and Data Radio ID number for XM weather) numbers. Also verify with XM that the correct Weather package (Aviator Lite or Aviator) is on the account, and that no traffic service has been activated against that Radio ID. The unit must be on for approximately one hour after the request for the refresh has been sent to receive the signal. ✓Alternatively, you may also go to XM's website and enter the radio ID's to have a refresh signal sent. ✓ If there is still problems receiving weather products after performing the above step, call XM and have the account deactivated, and a new account activated to clear out any corrupt account information. ✓ Verify there is a good ground connection through the aircraft between the MFD and the GDL69/69A unit. Reference the Aircraft Maintenance Manual for instructions on how to check bonding and ground points. ✓ If problem persists, replace the GDL 69/69A.

5.14.2 GDL 69A Alerts

Failure Message	Cause	Solutions
GDL 69 FAIL – GDL 69 has failed.	The G1000 has detected a failure in the GDL 69A.	• Replace GDL 69A. • Check GDL 69A antenna and cabling. • Check the GDL 69A and MFD interconnect.
GDL69 CONFIG – GDL 69 configuration error. Config service req'd.	The G1000 has detected a GDL 69A configuration mismatch.	• Reload configuration file. See Section 3.9 for the Configuration Procedure. • If problem persists, replace master configuration module, check config module harness for faults and replace if necessary. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other cards will no longer work as they will remain locked to the old System ID number.
MANIFEST – GDL software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the GDL 69A.	• Load correct software version. See Section 3.9 for the Software Load Procedure.

5.15 GRS 77/GMU 44 Troubleshooting

5.15.1 AHRS Common Problems

Symptom	Recommended Action
AHRS does not complete initialization	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Ensure GPS has acquired at least four satellites, has a 3D navigation solution, and a DOP of less than 5.0. This is particularly important if this issue appears during ground operation only. • Calibrate the GRS 77. • Check GRS 77 configuration module wiring for damage. • Check GRS 77 connector for bent pins. ✓ If no damage can be found, replace GRS 77 configuration module. ✓ If problem persists, replace the GRS 77.
Attitude appears unstable	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Ensure the four GRS 77 mounting screws are tight. Finger tight is not sufficient, a screwdriver must be used to verify. • Ensure mounting rack and airframe shelf are secure and all hardware and brackets are present (CAUTION - do not loosen the mounting rack hardware to the airframe shelf or the aircraft will need to be re-leveled and the PITCH/ROLL OFFSET procedure performed). • Ensure GRS 77 connector is securely fastened and proper strain relief is provided. • Remove GRS 77 connector and verify there are no bent pins. • Replace the GRS 77. • Contact Garmin for further troubleshooting if required.

5.15.2 GRS Alerts

Failure Message	Cause	Solutions
MANIFEST – GRS1 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the specified GRS 77.	• Load correct software version. See Section 3.9 for the Software Load Procedure.
MANIFEST – GRS2 software mismatch. Communication halted.		
AHRS1 SERVICE – AHRS1 magnetic-field model needs update.	The AHRS magnetic field model should be updated for the specified unit. Appears on ground only.	• Load updated AHRS magnetic field file. See Section 4.6.
AHRS2 SERVICE – AHRS2 magnetic-field model needs update.		
GEO LIMITS – AHRS1 too far north/south, no magnetic compass.	No magnetic compass information available due to being too far north or south.	• Operate the aircraft only within the limits as specified in the G1000/GFC 700, King Air 200/B200 AFMS, listed in Table 1-3
GEO LIMITS – AHRS2 too far north/south, no magnetic compass.		
AHRS1 TAS – AHRS1 not receiving airspeed.	The specified GRS 77 is not receiving airspeed from the GDC 74B.	• Check GRS/GDC interconnect for faults. • Replace the GDC 74B • If problem persists, replace the GRS 77.
AHRS2 TAS – AHRS2 not receiving airspeed.		
AHRS1 GPS – AHRS1 not receiving backup GPS information.	The GRS 77 #1 is not receiving backup GPS information from either GIA 63.	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Check GPS status for GIA 1 and 2 on MFD - AUX GPS STATUS page. If one or both GPS receivers cannot acquire a position lock, see GPS troubleshooting section • Troubleshoot GIA1/2 –GRS1 wiring for faults (ref. Failed Path troubleshooting section). • Replace the GRS 77 #1.
AHRS1 GPS – AHRS1 operating exclusively in no-GPS mode.	The GRS 77 #1 is operating in the absence of GPS.	
AHRS1 GPS – AHRS1 not receiving any GPS information.	The GRS 77 #1 is not receiving GPS data from the GPS receivers.	
AHRS1 GPS – AHRS1 using backup GPS source.	The GRS 77 #1 is using the backup GPS data path.	
AHRS2 GPS – AHRS2 not receiving backup GPS information.	The GRS 77 #2 is not receiving backup GPS information from either GIA 63.	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Check GPS status for GIA 1 and 2 on MFD - AUX GPS STATUS page. If one or both GPS receivers cannot acquire a position lock, see GPS troubleshooting section • Troubleshoot GIA1/2 –GRS2 wiring for faults (ref. Failed Path troubleshooting section). • Replace the GRS 77 #2
AHRS2 GPS – AHRS2 operating exclusively in no-GPS mode.	The GRS 77 #2 is operating in the absence of GPS.	
AHRS2 GPS – AHRS2 not receiving any GPS information.	The GRS 77 #2 is not receiving GPS data from the GPS receivers.	
AHRS2 GPS – AHRS2 using backup GPS source.	The GRS 77 #2 is using the backup GPS data path.	
AHRS MAG DB – AHRS magnetic model database version mismatch.	The G1000 has detected a magnetic model database version mismatch.	• Load AHRS magnetic model field in both GRS units.

Failure Message	Cause	Solutions
MAG VAR WARN – Large magnetic variance. Verify all course angles.	Magnetic variance value from GMU 44 is not accurate.	• If flying near large radio towers or other sources of possible electromagnetic interference, the condition should correct itself as the aircraft leaves the area. • If problem persists, run magnetic interference check in Section 5.15.4 to check for magnetic interference in the aircraft.

5.15.3 GMU Alerts

Failure Message	Cause	Solutions
MANIFEST – GMU1 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the specified GMU 44.	Load the correct software version. See Section 3.9 for the Software Load Procedure.
MANIFEST – GMU2 software mismatch. Communication halted.		
HDG FAULT – AHRS1 magnetometer fault has occurred	A fault has occurred in the specified magnetometer; heading will be flagged invalid.	• Check GMU 44/GRS 77 interconnect for faults. ✓ Replace GMU 44. ✓ If problem persists, replace GRS 77.
HDG FAULT – AHRS2 magnetometer fault has occurred.		

5.15.4 Calibration Procedure E: Magnetometer Interference Test

A magnetometer interference test is available for troubleshooting and/or verifying a magnetically 'clean' installation of the GMU 44. This test exercises various devices on the aircraft that could potentially affect the magnetic field as measured by the GMU 44.

NOTE

This test is used to validate that no electronic device interferes with the operation of the GMU 44 magnetometer. It is highly recommended that this test be performed after installation or maintenance of electrical components on the aircraft and/or for troubleshooting the GMU 44.

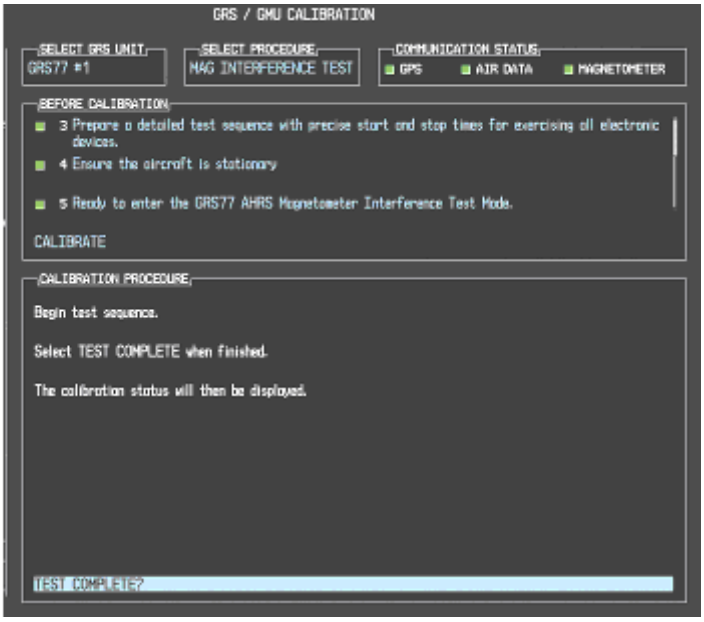

GRS / GMU CALIBRATION
SELECT GRS UNIT
GRS77 #1
SELECT PROCEDURE
MAG INTERFERENCE TEST
COMMUNICATION STATUS
GPS
AIR DATA
MAGNETOMETER
BEFORE CALIBRATION
3 Prepare a detailed test sequence with precise start and stop times for exercising all electronic devices.
4 Ensure the aircraft is stationary
5 Ready to enter the GRS77 AHRS Magnetometer Interference Test Mode.
CALIBRATE
CALIBRATION PROCEDURE
Begin test sequence.
Select TEST COMPLETE when finished.
The calibration status will then be displayed.
TEST COMPLETE?

Figure 5-7, Magnetometer Interference Test

1. Initiate the AHRS magnetometer interference test procedure by performing the following steps:

2. On PFD1, enter Configuration Mode and go to GRS/GMU Calibration page as shown in Figure 5-7.

3. This page is protected and requires a keystroke password to perform this test. Press the following softkeys in sequence: (as counted from left to right on lower bezel of MFD)

   - softkey 9
   - softkey 10
   - softkey 11
   - softkey 12

4. Select MAG INTERFERENCE TEST and press the PFD1 ENT key.

5. Follow the checklist items displayed on the PFD1, and press the ENT key as each one is completed or confirmed.

NOTE

The 3rd item on the checklist instructs the operator to "prepare a detailed test sequence with precise start and stop times for exercising all electronic devices". The list of relevant electronic devices are given in Table 5-5. Begin test with flaps retracted, flight controls in a neutral position, all lights selected OFF.

Elapsed Time since Start of Test (min:secs)	Action
0:00	Test begins
0:05	Tail Flood lights on
0:10	Tail Flood lights off
0:20	Navigation lights on
0:30	Navigation lights off
0:40	Landing lights on
0:50	Landing lights off
1:00	Taxi lights on
1:20	Taxi lights off
1:40	Strobes on
1:50	Strobes off
2:00	Recognition lights on
2:10	Recognition lights off
2:20	Beacon on
2:30	Beacon off
2:40	Rudder full left
2:50	Rudder full right
3:00	Elevator full nose UP
3:10	Elevator full nose DN
3:15	End of test

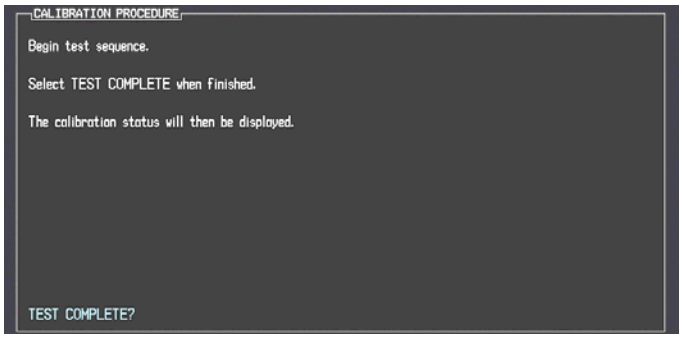
Table 5-5, Magnetometer Interference Test Sequence

Elapsed Time since Start of Test (min:secs)	Action
0:00	Test begins
0:05	Tail Flood lights on
0:10	Navigation lights on
0:20	Navigation lights off
0:30	Landing lights on
0:40	Landing lights off
0:50	Taxi lights on
1:00	Taxi lights off
1:20	Strobes on
1:40	Strobes off
1:50	Recognition lights on
2:00	Recognition lights off
2:10	Beacon on
2:20	Beacon off
2:30	Rudder full left
2:40	Rudder full right
2:50	Elevator full nose UP
3:00	Elevator full nose DN
3:10	End of test

6. When the CALIBRATE field is blinking, press the ENT key to begin the procedure, and have a stopwatch ready to begin recording the elapsed time.

NOTE

It is important that the "time equals zero" moment corresponds with the moment the PFD first displays the blinking TEST COMPLETE? Message.



7. The operator should carry out the actions called for in the prepared test sequence.

NOTE

It is important that all actions are carried out in the order and at the precise elapsed time as specified in the prepared test sequence.

8. When the operator has completed the actions specified in the test sequence, press the ENTER button to indicate that the process is complete. When this is done, the TEST COMPLETE field stops blinking.

9. PFD1 informs the operator if the installation has passed or failed the magnetometer interference test. If the test passes, no further action is required for this test.

If the test fails, the installation should be considered unreliable until the source of magnetic interference is identified and remedied. When the magnetometer interference test fails, record the three magnetometer maximum deviation values and their corresponding timestamps. Any maximum deviation value greater than 2.5 milliGauss indicates a problem that must be resolved. Compare the corresponding timestamps with the prepared test sequence to identify which action produced the problem. Contact Garmin for assistance in resolving the problem.

NOTE

Three common reasons for a failed magnetometer interference test are: 1) rudder bellcrank or other structure has become magnetized, 2) new equipment is installed in close proximity to the GMU 44 magnetometer, and 3) an existing or new electronic device has become grounded through the aircraft structure instead of via the proper ground wire in a twisted shielded pair.

10. Press the ENT key on the PFD to conclude this procedure.

5.16 GDC 74B Troubleshooting

5.16.1 Air Data Common Problems

Symptom	Recommended Action
Altitude is different than standby altimeter	• Perform a pitot/static check per Section 7.6 of this manual. • Determine which instrument is outside limits and replace. The GDC may be field adjusted per Garmin Service Advisory 0720. Note: Both units may individually be in spec but show a difference in altitude. Do not return the GDC to Garmin for service if not outside limits. Note: The GDC 74B software for the 200/B200 contains error correction at 19,000 feet and above. The standby altimeter does not contain any correction.
GDC Config file does not load.	• Replace GDC config module. ✓ If problem persists, replace GDC config module wire harness.

5.16.2 GDC 74B Alerts

Failure Message	Cause	Solutions
MANIFEST – GDC1 software mismatch Communication halted.	The system has detected an incorrect software version loaded in the specified GDC 74B.	• Load correct software version. See Section 3.9 for the Software Load Procedure.
MANIFEST – GDC2 software mismatch Communication halted.		

5.17 GWX 68 Troubleshooting

5.17.1 GWX 68 Alerts and Problems

WARNING:

Before energizing the equipment, be sure microwave radiation safety precautions including both fuel and personnel safety considerations have been observed. These include clearing all personnel to an area beyond the maximum permissible exposure level (MPEL) boundary. The MPEL for the GWX 68 is 11 feet.

Failure Message	Cause	Solutions
GWX CONFIG – GWX configuration error. Configuration service required.	The G1000 has detected a GWX 68 configuration mismatch.	• Load GWX configuration files, • Replace GWX. • If problem persists, replace master configuration module, check config module wiring for faults and replace if necessary. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other cards will no longer work as they will remain locked to the old System ID number.
GWX FAIL – GWX is inoperative.	The G1000 has detected a failure in the GWX 68.	• Check Ethernet connection between the GWX and GDL69A for faults. • Replace the GWX 68
GWX SERVICE – Needs service. Return unit for repair.	The G1000 has detected a failure in GWX 68.	• Replace the GWX 68.
MANIFEST – GWX software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the GWX 68.	• Load correct software version. See Section 3.9 for the Software Load Procedure.

5.18 GMC 710 Troubleshooting

5.18.1 GMC 710 Alerts and Problems

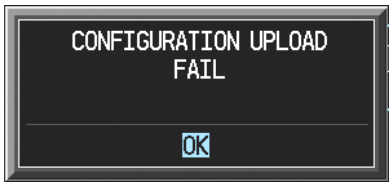
Failure Message	Cause	Solutions
GMC CNFG – GMC Config error. Config service req'd.	The G1000 has detected a GMC 710 configuration mismatch.	• Load GMC configuration files. • Replace GMC. • If problem persists, replace master configuration module, check config module wiring for faults and replace if necessary. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other cards will no longer work as they will remain locked to the old System ID number.
GMC FAIL – GMC is inoperative.	The G1000 has detected a failure in the GMC 710.	• Check wiring for faults (ref Failed Path troubleshooting section 5.7). • Replace the GMC 710.
MANIFEST – GMC software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the GMC 710.	• Load the correct software version. See Section 3.9 for the Software Load Procedure.

5.19 GCU 477 Troubleshooting

5.19.1 GCU 477 Alerts and Problems

Failure Message	Cause	Solutions
GCU CNFG – GCU Config error. Config service req'd.	The G1000 has detected a GCU 477 configuration mismatch.	• Load GCU configuration files. • Replace GCU. • If problem persists, replace master configuration module, check config module wiring for faults and replace if necessary. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other cards will no longer work as they will remain locked to the old System ID number.
GCU FAIL – GCU is inoperative.	The G1000 has detected a failure in the GCU 477.	• Check wiring for faults (ref Failed Path troubleshooting section). • Replace the GCU 477.
MANIFEST – GCU software mismatch. Communication halted.	The system has detected an incorrect software version loaded in GCU 477.	• Load the correct software version. See Section 3.9 for the Software Load Procedure.

5.20 Software/Configuration Troubleshooting

Problem	Solutions
MFD or PFD displays do not power up:	• Ensure that the criteria listed in Section 5.20.1 are fulfilled for the applicable situation. • Ensure power is present at display backshell connector. • Troubleshoot per the “Blank Display” GDU section.
Software file load fails: 	• Ensure that criteria listed in Section 5.20.1 are fulfilled for the applicable situation. • Ensure that LRU is reporting data on System Status page (LRU is ‘ONLINE’). Check data path wiring as needed. • Retry software file load or try using a different card. Ensure that the MFD is not touched during the loading process. • Ensure that LRU part number is compatible with software version and Card Loader. Refer to the General Arrangement Drawing and to Section 3.8 of this document. • Replace LRU.
Configuration file load fails: 	• Ensure that the criteria listed in Section 5.20.1 are fulfilled for the applicable situation. • Ensure that LRU is reporting data on System Status page (LRU is ‘ONLINE’). Check data path wiring as needed. • Retry configuration file load or try using a different card. Ensure that the MFD is not touched during the loading process. • Ensure that LRU part number is compatible with Card Loader. Refer to the General Arrangement Drawing and to Section 3.8 of this document. • Replace LRU.
GIA1 and/or GIA2 to ‘LRU’ data path not working	• Ensure that the criteria listed in Section 5.20.1 are fulfilled for the applicable situation. • Ensure GIA1 and GIA2 are configured correctly. • Check wiring, connectors & pins as needed.
Software File Mismatch Alert appears in lower right corner of PFD when started in normal mode: 	• Ensure that proper software file part number and version were loaded to LRU. Refer to the General Arrangement Drawing and to Section 5.20.1. • Check and ensure that correct Card Loader was used during load process. Refer to the General Arrangement Drawing. • Reload software to LRU.

5.20.1 System Communication Hierarchy

The following criteria must be satisfied to be able to perform the desired operation:

Desired Operation	Criteria for Success
Load Software to MFD or PFD Displays	• SW Loader Card must be inserted in top slot for each display to be loaded. • CLR & ENT keys must be held during power up of display. • Power on only one display at a time during software loading.
Load AIRFRAME, SYSTEM, MFD1, PFD 1, PFD 2 and MANIFEST configuration files to MFD and PFDs	• SW Loader Card must be inserted in top slot of PFD 1. • PFD 1 and MFD must be powered on. • PFD 1 and MFD must have correct software.
Load Software/Configuration files to GIA 63Ws	• SW Loader Card must be inserted in top slot of PFD 1. • G1000 system must be powered on. • PFD and MFD must have correct software. • PFD 1 and MFD must be successfully configured with AIRFRAME, SYSTEM, MANIFEST, MFD1, PFD 1 and PFD 2 configuration files.
Load Software/Configuration files to: - GMA 1347D - GDC 74B - GEA 71 - GRS 77 (software only) - GMU 44 (software only) - GTX 33	• SW Loader Card must be inserted into PFD 1 top slot. • G1000 must be powered on. • PFD 1 and MFD must have correct software and configuration settings. • GIA 63Ws must have correct software. • GIA 63Ws must be successfully configured with GIA1 and GIA2 configuration files. • Data path from GIA1 to each LRU must be operational.

5.21 Backshell/Backplate Connectors

The following figures depict the backplate connectors as viewed with the LRU removed.

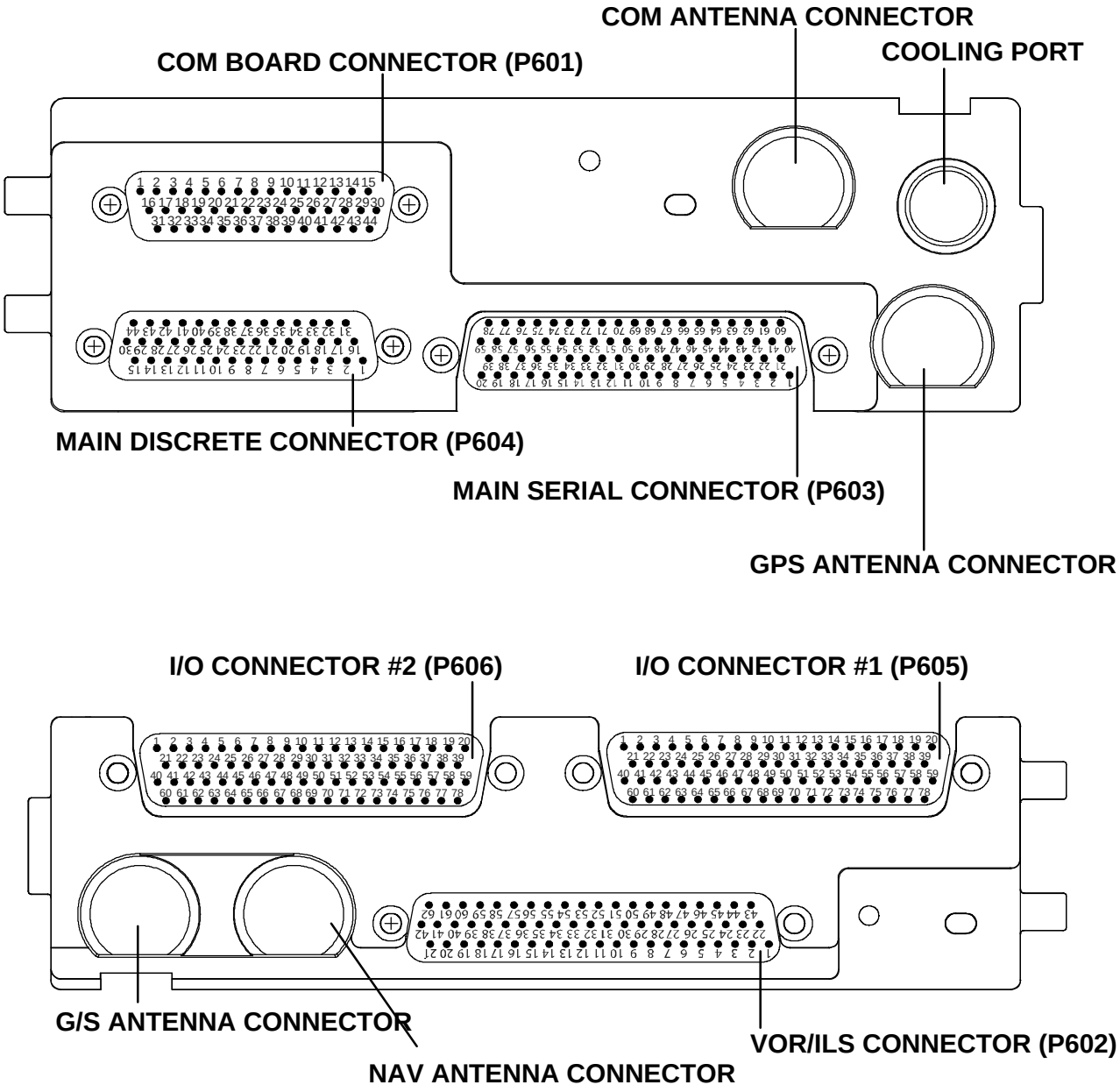


Figure 5-8, GIA 63W Backplate Connectors

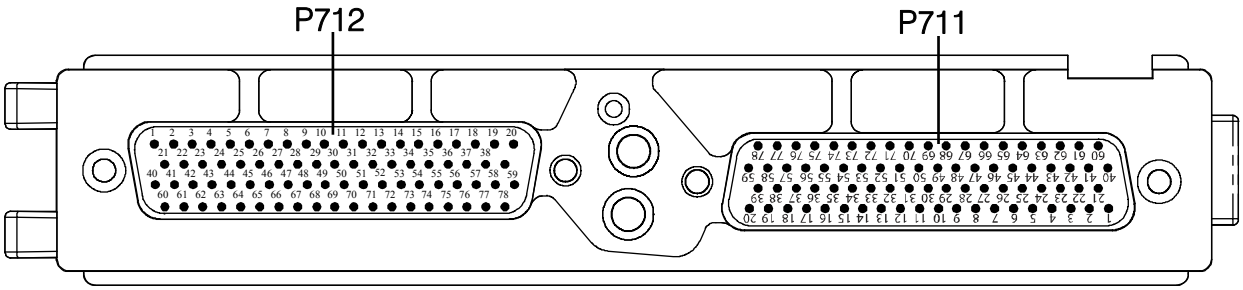


Figure 5-9, GEA 71 Backplate Connectors

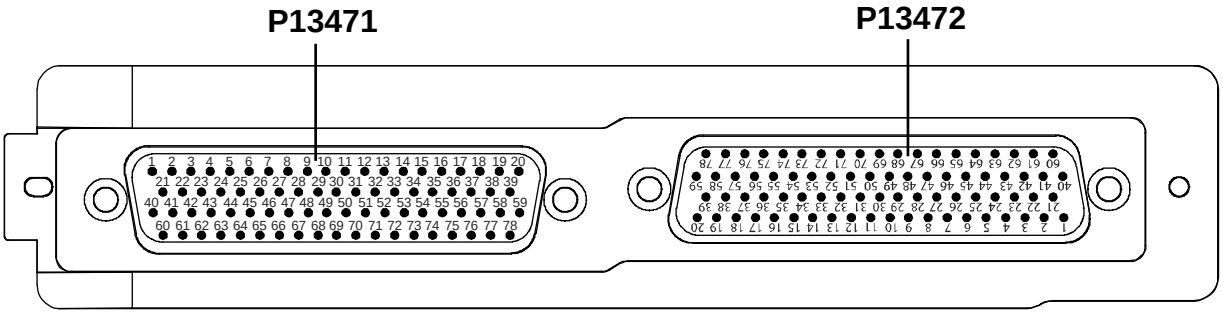


Figure 5-10, GMA 1347D Backplate Connectors

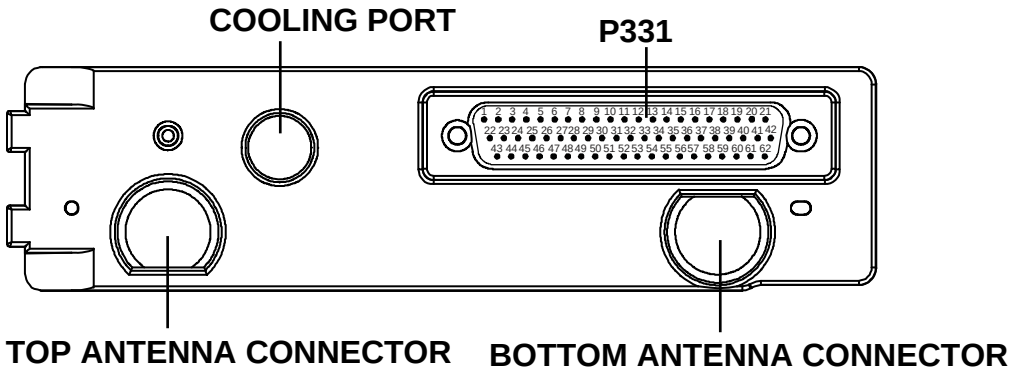


Figure 5-11, GTX 33/33D Backplate Connectors

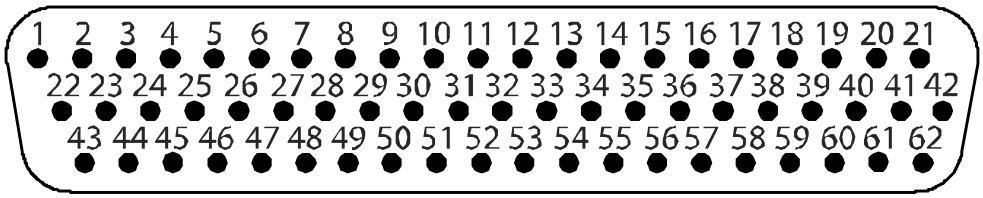


Figure 5-12, GDU 1040A/1500 Backshell Connector (P10401 or P15001)

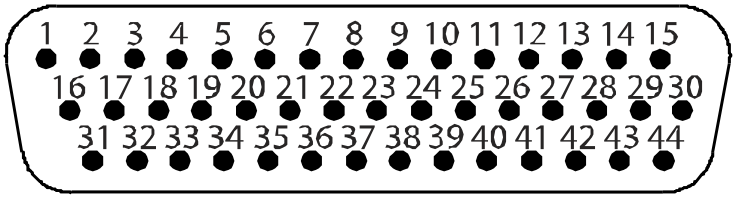


Figure 5-13, GRS 77 Backshell Connector (P771)

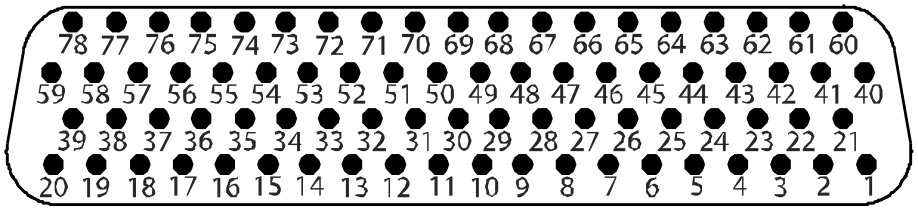


Figure 5-14, GDC 74B Backshell Connector (P74B1)

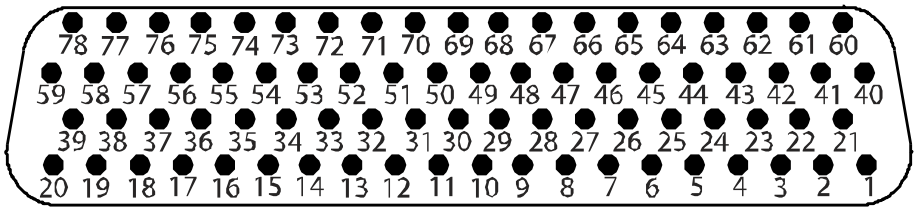


Figure 5-15, GDL 69A Backplate Connector (P69A1)

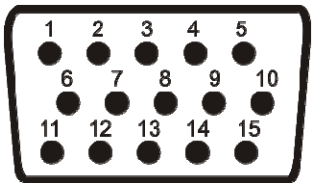


Figure 5-16, GCU 477 Backshell Connector (P4751)

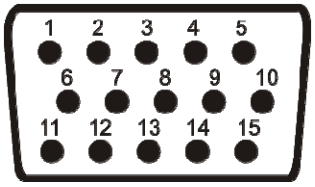


Figure 5-17, GMC 710 Backshell Connector (P7101)

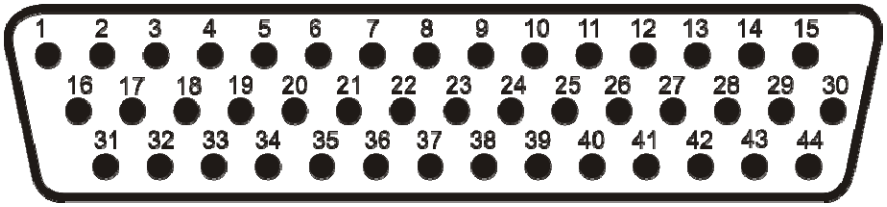


Figure 5-18, GWX 68 Backshell Connector (P681)

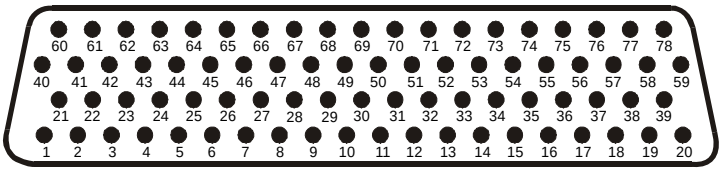


Figure 5-19, GTS 820/850 Mating Connectors (P8001 and P8002) (Rear View)

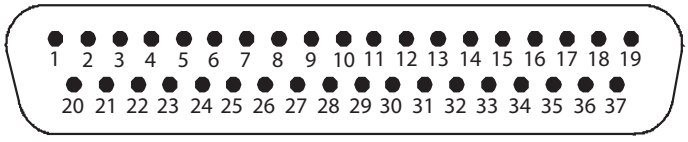


Figure 5-20, GTS 820/850 Mating Connector (P8003) (Rear View)

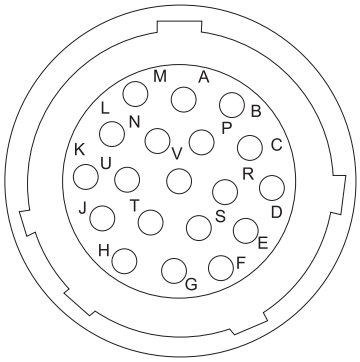


Figure 5-21, GPA 65 Mating Connector (P651)
(Rear View)

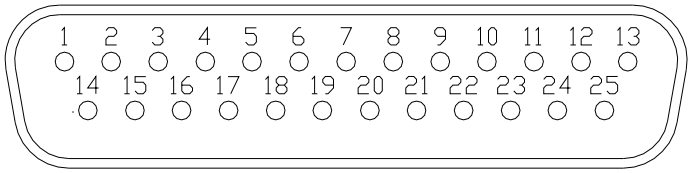


Figure 5-22, Signal Conditioner (1PVIB1 and 2PVIB1)
(Rear View)

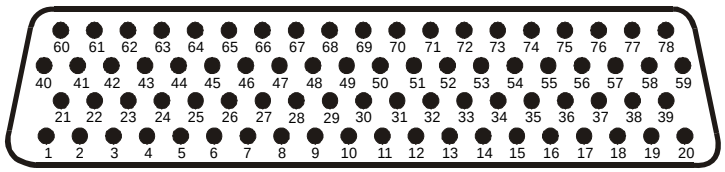


Figure 5-23, GDL 59 Mating Connector (1P591)
(Rear View)

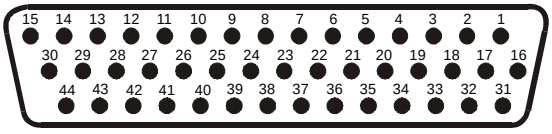


Figure 5-24, GSR 56 Mating Connector (1P561)
(Rear View)

5.22 Standby Attitude Indicator Troubleshooting

Symptom	Recommended Action

Warning flag pops into view, indicating that the gyro motor is not receiving sufficient power to operate	• Perform the Standby Instrument Electrical Power Checks in Section 8.1.5.
	• Remove the unit per Section 6.27 and inspect the electrical connector.
	• Check to ensure appropriate electrical power is being supplied to the instrument.
	  • If input electrical power is not adequate, troubleshoot the wiring harness.
	  • If input power is appropriate, the unit must be removed and serviced by a qualified service facility See Section 6.27 for removal instructions. Contact the manufacturer to find a qualified service facility

Unit fails to perform to specifications	• The unit must be removed and serviced by a qualified service facility. See Section 6.27 for removal instructions. Contact the manufacturer to find a qualified service facility.

5.23 Standby Airspeed Indicator Troubleshooting

Symptom	Recommended Action

Airspeed Indicator lighting is inoperative or malfunctioning	• Perform the Standby Instrument Electrical Power Checks in Section 8.1.5.
	• Remove standby airspeed indicator per Section 6.25 and inspect the electrical connector.
	• Check that electrical power is being appropriately supplied to the instrument.
	  • If the input electrical power is not adequate, troubleshoot the wiring harness.
	  • If the input electrical power is appropriate, replace the standby airspeed indicator or contact the manufacturer for further troubleshooting.

Airspeed displayed is incorrect	• Using a pitot-static ramp tester, check airspeed displayed on standby altimeter against airspeed display from ADC2.
	  • If the airspeeds are the same, inspect the pitot/static ports and associated equipment for faults.
	  • If the airspeeds are different, replace the standby altimeter or contact the manufacturer for further troubleshooting. See Section 6.25 for removal instructions.

5.24 Standby Altimeter Troubleshooting

Symptom	Recommended Action

Altimeter lighting is inoperative or malfunctioning
 	
Altimeter Vibrator is inoperative or malfunctioning or fail flag is displayed
	• Perform the Standby Instrument Electrical Power Checks in Section 8.1.5.
	• Remove standby altimeter per Section 6.26 and inspect the electrical connector.
	• Check that electrical power is being appropriately supplied to the instrument.
	  • If the input electrical power is not adequate, troubleshoot the wiring harness.
	  • If the input electrical power is appropriate, replace the standby altimeter or contact the manufacturer for further troubleshooting.

Altitude displayed is incorrect	• Using a pitot-static ramp tester, check altitude displayed on standby altimeter (Note that PFD2 has error correction above 19,000 ft. and will not be the same as the non-corrected standby altimeter.) ✓ Inspect the pitot/static ports and associated equipment for faults. ✓ Replace the standby altimeter or contact the manufacturer for further troubleshooting. See Section 6.26 for removal instructions.

5.25 Safe Flight Lift Computer Troubleshooting

Symptom	Recommended Action
Stall Warning System is not working properly or is invalid	• Troubleshoot in accordance with the King Air 200 Series Maintenance Manual, listed in Table 1-2, section 27-31-00.
Stall Warning Mounting Plate or Vane Heater Inoperative	• Troubleshoot in accordance with the King Air 200 Series Maintenance Manual, listed in Table 1-2, section 27-31-00.
Only Pot 0 provides any adjustment for Stall Warning points.	• Troubleshoot in accordance with the King Air 200 Series Maintenance Manual, listed in Table 1-2, section 27-31-00.
Stall Warning Self Test Will Not Work Properly	• Troubleshoot in accordance with the King Air 200 Series Maintenance Manual, listed in Table 1-2, section 27-31-00.
Flap Information to the computer is not working properly.	• Troubleshoot in accordance with the King Air 200 Series Maintenance Manual, listed in Table 1-2, section 27-31-00.
Display of ESP Alpha Floor Symbology is inoperative or erratic. or Advisory Alert – “ESP DEGRADE – ESP AOA Mode is inoperative”	• Insure power is removed from the Stall Warning System. • With the aircraft on the ground, install the SK100360 Breakout Box per Figure 7-15, Breakout Box and perform the following resistance measurements per the table below. **Test Points (TP) on SK100360 Breakout Box** / **Expected Readings** 24 – 25 / 140 ± 28 ohms 26 – 27 / 320 ± 64 ohms 28 – 27 / 320 ± 64 ohms • If the resistances are not within the ranges specified check the aircraft wiring between the computer and the transducer in accordance with the appropriate Hawker Beechcraft wiring diagram. • If the wiring between the computer and the transducer is good replace the transducer. • If the resistances are within the ranges specified, check that there is a ground on TP 2. • If all the resistances are within the ranges specified and there is a ground on TP 2, apply power to the (Stall Warning System) Lift Computer and check for the presence of 28 VDC from the aircraft circuit Breaker (C/B) on TP 1 (Hi) and TP 2 (Lo).

	• If the 28 VDC is missing, check the C/B. • If 28 VDC power to the computer is present, check the transducer excitation voltage on TP 24 (Hi) and TP 25 (Lo). The voltage should be 10 ± 0.75 VAC at 720 ± 72 Hz. • If the excitation voltage is not within the ranges specified, replace the computer. • If the excitation voltage is within the ranges specified, check the LAA output on TP 18 (Lo) and TP 19 (Hi). The output is a varying DC voltage based on the transducer vane position. The output from the computer with the vane in neutral position depends on the flap position. See table below.

Flaps	Output
Full Up	+0.3 to 1.3 VDC
Approach	+0.75 to 1.75 VDC
Full Down	+1.1 to 2.1 VDC

• If the output on TP 18 (Lo) and TP 19 (Hi) is not within the ranges specified, replace the Lift Computer.

• If the output on TP 18 (Lo) and TP 19 (Hi) is within the ranges specified, check the aircraft wiring in accordance with the appropriate Garmin wiring schematic.

5.25.1 Lift Computer Functional Pinout

Pin	I/O	Function	Information
1	I	28 VDC Input	
2		28 VDC ground	
4	O	Flap Transmitter Excitation	28 VDC
5	I	Flap Transmitter Input (Half Flap)	28 VDC input from the flap transmitter
6	I	Flap Transmitter Input (Full Flap)	28 VDC input from the flap transmitter
7	I	Squat Switch Input	Logic: Open/Ground Ground = In-Air
8	I	Self Test Input	Ground = Test
9	O	Valid	28 VDC = Valid, Open = Fail
10	I	28 VDC Essential Bus Input	Jumpered from pin 1 of the mating connector
12	O	Pre-Stall Warning #1	28 VDC = Stall Warning
15	O	Pre-Stall Warning #2	Ground = Stall Warning
16	O	Transducer Self-Test	Output +15 VDC for On-Ground self test to Lift Transducer (Pin 8 of the transducer).
17	O	System Fail	28 VDC output = Fail
18	O	Low Airspeed Awareness (LAA) (Lo)	This output is (0 VDC) at stall warning. Potentiometers 3, 4 and 5 on top of the computer are used to adjust the (LAA) outputs to 2.2 VDC. Pot 3 = (0 flaps) LAA adjustment. Pot 4 = (½ flaps) LAA adjustment. Pot 5 = (full flaps) LAA adjustment.
19	O	LAA Output (Hi)	
22	O	Lift Transducer Test Point	Varying voltage from Lift Transducer
23		Signal Ground	
24	O	Lift Transducer Excitation Voltage (Hi)	10 VAC 700 Hz nominal
25	O	Lift Transducer Excitation Voltage (Lo)	

26	I	Lift Transducer Secondary (Fast) Input	Lift Transducer Secondary Input into the computer.
27	I	Lift Transducer Center Tap (Common)	
28	I	Lift Transducer Secondary (Slow) Input	

5.25.2 Lift Transducer Functional Pinout

Pin	I/O	Function	Information
1	O	Slow Secondary Pin (Hi)	Vane resistance Pins 6 to 7 (Lo) = 70 ohms Fast Secondary Pins 3 to 4 (Lo) = 320 ohms Slow Secondary Pins 1 to 4 (Lo) = 320 ohms Center E-Core Primary Pins 2 to 5 (Lo) = 140 ohms Self-Test coil Pins 8 to 7 (Lo) = 50 ohms. All resistances are +/- 20%
2	I	Center E-Core Primary Pin (Hi)	
3	O	Fast Secondary Pin (Hi)	
4		Secondary Pin (Lo)	
5	I	Center E-Core Primary Pin (Lo)	
6	I	Vane Heater Pin (Hi)	
7		Vane Heater Pin (Lo)	
8	I	Self Test Coil Pin (Hi)	
Transducer Mounting Plate heater resistance is 2.1 ± 20% ohms at ambient temperature			

5.26 GDL 59 Troubleshooting

Symptom	Recommended Action
No communication with GDL 59	• Check power wiring and pin out of GDL 59 unit. • Ensure GDL 59 configuration option has been loaded.
No or low-quality wi-fi signal	• Verify that a wi-fi network is configured and available. • Ensure the wi-fi antenna is within range of a wi-fi network. • Remove any obstacles between the aircraft wi-fi antenna and the wi-fi network hub that may be blocking the signal. • Check the wi-fi antenna cable and connectors. • Verify antenna ground plane is adequate.
Connects to wi-fi but cannot send report data	• Activate Garmin Flight Data Services (reference Section 7.27). Note that a replacement GDL 59 unit must be registered again, even if the MFD already shows **REGISTERED**.

5.27 GSR 56 Troubleshooting

Symptom	Recommended Action
No communication with GSR 56	• Check power wiring and pin out of GSR 56 unit. • Ensure GSR 56 configuration option has been loaded.
No or low-quality Iridium signal	• Ensure the Iridium antenna has an unobstructed view of satellite constellation. • Check the Iridium antenna cable and connectors. • Verify antenna ground plane is adequate.
No audio output	• Check wiring from GSR 56 toGDL 59 • Verify subscription with Garmin Flight Data Services (reference Section 7.27).
Unable to make a phone call	• Verify signal quality is adequate • Verify communication between GSR 56 and the display/control device • Verify subscription with Garmin Flight Data Services (reference Section 7.27).

5.28 GTS 820/850 Troubleshooting

Problem	Cause	Solution
Unit does not power up – Data failed message	Improper wiring; circuit breaker open	Ensure power is properly wired to the GTS 8XX and the TRFC circuit breaker is closed
	Improper configuration	Verify that the GTS 8XX is configured correctly for the desired display
Traffic Display erroneously indicates TA at own ship position	Suppression bus I/O fault	Check the mutual suppression line to ensure it is connected to the correct pins at the GTS 8XX as well as the installed transponder. Ensure there are no fractures in the wire, and that the suppression line is functioning properly.
No Audio alerts	Improper wiring; Volume not set correctly	Ensure the audio is properly wired from the GTS 8XX and volume is not set too low
Calibration Fault	Factory calibration invalid	If the unit fails to go into operate mode then return to Garmin for service
Configuration Fault	Both internal and external configuration checks failed	Verify the configuration
		Verify wiring to the configuration module and replace if necessary
FPGA Fault	Internal Fault	Return to Garmin for service
ROM Fault	Internal Fault	Return to Garmin for service
Execution Fault	Internal Fault	Return to Garmin for service
Electrical Fault	Internal Fault	Return to Garmin for service
Whisper Shout Fault	Internal Fault	Return to Garmin for service
Transmit Power Fault	Internal voltages are out of tolerance	Check power connections to the GPA 65 to verify that they are not connected to ground or each other. Ensure that power and ground connections to the GPA 65 are

Problem	Cause	Solution
		connected in their proper place. Verify input voltage and if it continues return to Garmin for service.
1030 MHz Fault	Internal Fault	Return to Garmin for service
1090 MHz Fault	Internal Fault	Return to Garmin for service
PA/LNA Fault	Antenna connections or internal fault	Ensure all antenna connections are correct otherwise return to Garmin for service
Receiver Fault	Antenna connections or internal fault	Ensure all antenna connections are correct otherwise return to Garmin for service
Transmitter Fault	Antenna connections or internal fault	Ensure all antenna connections are correct otherwise return to Garmin for service
Baro Altitude Fault	Baro Altimeter is not powered on or improper wiring.	Verify that the baro altimeter has power and is properly wired.
	Improper configuration settings	Verify the configuration correct
Temperature Fault	Fan is not operating, Poor ventilation at the mounting location	Verify the fan is running and the unit is getting adequate ventilation.
TCAS Equipage Fault	Broken wire, improper configuration	Verify configuration settings on the transponder and the GTS. Ensure proper wiring between the transponder and the GTS
Radio Altitude Fault	Radio Altimeter is not powered on or improper wiring.	Verify that the radio altimeter has power and is properly wired.
	Improper configuration settings	Verify the configuration is correct.
Red ‘X’ on a data port on the configuration page	Improper wiring; wrong port or speed selected	Ensure the port is properly wired to the GTS 8XX and the correct settings are selected on the configuration page.

6 Equipment Removal & Installation

This section describes how to remove and replace equipment in the King Air 200/B200 associated with this STC. After removal and replacement, LRUs must be configured and tested as described in Section 7.

CAUTION:

When removing and/or replacing any G1000 component, always ensure that aircraft power is off. Unplug any auxiliary power supplies. Before performing maintenance, it is required that the technician verify the LRU software part number and version number matches the software configuration listed in the General Arrangement drawing, listed in Table 1-2.

To check an LRU software part number and/or version, follow the procedure defined in Section 3.9.3.

If a faulty LRU is not reporting its software version and part number, check aircraft maintenance logs for last software version loaded and verify against the General Arrangement drawing. The Software Manifest page may also be used to check part numbers and versions.

The General Arrangement drawing allows alternate part number units to be installed with certain hardware/software combination restrictions. Refer to the applicable "Garmin Equipment/Software List" contained in the General Arrangement drawing for details.

6.1 GDU 1040A/1500

Removal:

1. Using a 3/32" hex tool, rotate all four ¼-turn fasteners counter-clockwise until they reach their stops.
2. Carefully remove the display from the panel.
3. While supporting the display, disconnect the connector.

Reinstallation:

1. Visually inspect the connector and pins for signs of damage. Repair any damage. While supporting the display, connect the connector to the rear of the unit.
2. Carefully insert the display into the panel cutout, ensuring that all 4 ¼-turn fasteners align with the corresponding holes.
3. Seat the display in the panel cutout. Do not use excessive force while inserting the display.
4. Once seated, rotate all four ¼-turn fasteners clockwise to lock the display to the panel.
5. Configure and test the MFD and/or PFD according to Section 7.1.

6.2 GMA 1347D Audio Panel

Removal:

1. Using a 3/32" hex tool, turn the hex nut counter-clockwise until the GMA 1347D is unlocked from its location.
2. Carefully remove the GMA 1347D from its rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Gently insert the GMA 1347D into the rack until the locking tab engages the rack.
3. Begin to turn the hex nut clockwise. This draws the unit into the rack until seated. Do not over-tighten the nut.
4. Configure and test the GMA 1347D according to Section 7.2.

6.3 GIA 63W Integrated Avionics Units

Removal:

1. Gain access to the forward avionics compartment in the nose of the aircraft.
2. Unlock the GIA 63W handle by loosening the Phillips screw on the handle.
3. Pull the handle upward to unlock the GIA 63W. Gently remove the unit from the rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Gently insert the GIA 63W into its rack. The handle should engage the dogleg track.
3. Press down on the GIA 63W handle to lock the unit into the rack.
4. Lock the handle to the GIA 63W body using the Philips screw.
5. Configure and test the GIA 63W(s) according to Section 7.3.

6.4 GEA 71 Engine/Airframe Unit

Removal:

1. Gain access by removing the appropriate GDU 1040A display unit (see Section 6.1.)
2. Unlock the GEA 71 handle by unscrewing the Phillips screw.
3. Firmly grasp the GEA 71 handle and pull it up vertically. This unlocks the unit from the rack.
4. Gently remove the GEA 71 from its rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Gently insert the GEA 71 into the rack. The handle should engage the dogleg track.
3. Press down on the handle to lock the unit into place.
4. Lock the handle to the GEA 71 body using the Philips screw.
5. Configure and test the GEA 71 according to Section 7.4.
6. Reinstall the GDU 1040A display unit.

6.5 GTX 33( ) Transponder

Removal:

1. Gain access by removing the cabin center floor panel at the main entry door.
2. Remove the remote equipment shelf. Alternately, detach the two rack mount angles from the shelf. Retain all mounting hardware.
3. Unlock the GTX 33( ) handle by loosening the Phillips screw on the handle.
4. Pull the handle upward to unlock the GTX 33( ). Gently remove the unit from the rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Gently insert the GTX 33( ) into its rack. The handle should engage the dogleg track.
3. Press down on the GTX 33( ) handle to lock the unit into the rack.
4. Lock the handle to the GTX 33( ) body using the Philips screw.
5. Reinstall the remote equipment shelf or two rack mount angles using the retained hardware.
6. Reinstall the cabin center floor panel.
7. Configure and test the GTX 33( ) according to Section 7.5.

6.6 GDC 74B Air Data Computer

Removal:

1. Gain access by removing the appropriate GDU 1040A display unit (see Section 6.1.)
2. Disconnect the pitot/static plumbing from the rear of the unit. Disconnect the single connector.
3. Loosen each thumbscrew on the hold-down clamp and remove the clamp.
4. Carefully remove the unit from its mount.

Reinstallation:

1. Inspect the connector and pins for damage. Inspect the pitot/static plumbing for damage. Repair any damage.
2. Place the unit in the mounting tray. Position the locking clamp and fasten using the thumbscrews.
3. Connect the backshell assembly and pitot/static plumbing to the unit.
4. Configure and test the GDC 74B according to Section 7.6.
5. Reinstall the GDU 1040A display unit.

6.7 GTP 59 OAT Probe

Removal:

1. Using a deep-socket to hold the probe in place on the outside of the aircraft, loosen the GTP 59 mounting nut and remove the GTP 59.

Reinstallation:

1. Installation is the reverse of removal.
2. No configuration is required for the GTP 59. Test according to Section 7.6.3.

6.8 GRS 77 AHRS

Removal:

1. Gain access to the forward avionics compartment in the nose of the aircraft.
2. Disconnect the AHRS connector.
3. Loosen the four Phillips thumbscrews with a screwdriver until they are free from the rack.
4. Gently lift the GRS 77 from the mounting rack. (If the mounting rack is removed, the GRS 77 must be re-calibrated. Do not loosen mounting bolts. See Section 7.7)

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Place the GRS 77 on the mounting plate, ensuring the orientation is correct.
3. Fasten the unit to the plate using the Phillips thumbscrews.
4. Connect the connector to the GRS 77.
5. Calibrate and test the GRS 77 according to Section 7.7.

6.9 GMU 44 Magnetometer

Removal:

1. Disconnect electrical wiring harnesses and remove the tailcone.
2. Loosen three screws connecting the unit to the aircraft mounting bracket using a non-magnetic Phillips screwdriver.
3. Remove the cable tie attaching the magnetometer pigtail harness to the shelf.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Fasten the GMU to the aircraft mounting bracket using a non-magnetic Phillips screwdriver.
3. Attach the magnetometer pigtail harness to the shelf with a cable tie
4. Reinstall tailcone and connect the electrical wiring harnesses.
5. Calibrate and test the GMU 44 according to Section 7.7.

6.10 GDL 69A

Removal:

1. Gain access by removing the right side GDU 1040A display unit (see Section 6.1.)
2. Unlock the GDL 69A handle by loosening the Phillips screw on the handle.
3. Pull the handle upward to unlock the GDL 69A. Gently remove the unit from the rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Gently insert the GDL 69A into its rack. The handle should engage the dogleg track.
3. Press down on the GDL 69A handle to lock the unit into the rack.
4. Lock the handle to the GDL 69A body using the Philips screw.

5. Configure and test the GDL 69A according to Section 7.8.

6.11 GSA 80 Servos

Removal:

1. Gain access to the desired servo(s).
2. Disconnect the servo harness connector.
3. Use a socket or open-wrench to loosen and remove the servo attachment bolts. The Pitch-Trim servo bracket will need to be removed to access all the Pitch-Trim servo attachment bolts.
4. Carefully remove the servo and place a protective cover on the output gear.
5. Place a protective cover over the GSM 85A/86 servo gearbox.

Reinstallation:

1. Inspect the servo output gear for abnormal wear.
2. Using a lint-free cloth, remove excess grease build-up from the servo output gear (see Figure 6-1.)

IMPORTANT!

It is not necessary to remove all of the grease from the output gear, only the excess grease. DO NOT USE SOLVENTS TO CLEAN THE OUTPUT GEAR!

3. Using a brush or other applicator, apply a thin coat of Aeroshell 33MS (Lithium-complex based) grease to the servo output gear

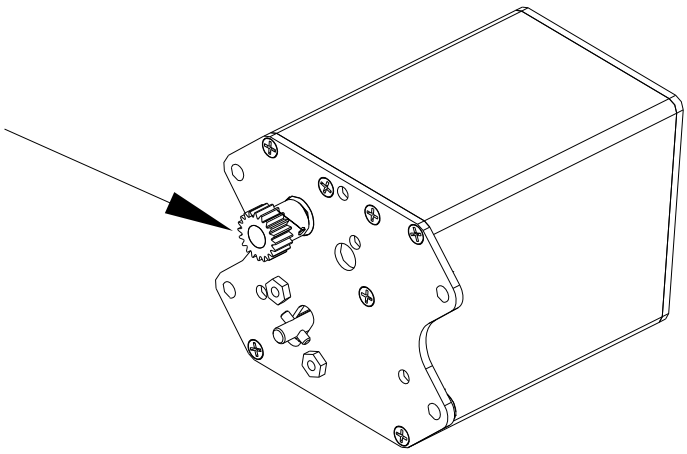


Figure 6-1, Servo Gear

4. Carefully place the servo into the servo gearbox, ensuring proper orientation and alignment.
5. Fasten the servo to the servo gearbox using the existing hardware. Follow the installation instructions provided in the respective servo installation drawing(s) listed in Table 1-2.
6. Inspect the harness connectors and check that no pins are bent or otherwise damaged. Connect the harness and secure it appropriately.
7. If no further maintenance is required, continue to Section 7.9.

6.12 GSM 85A/86 Servo Gearbox

Removal:

1. Remove the desired servo(s) per Section 6.11.
2. For the Roll, Pitch and Yaw Servos: remove the servo bridle cables from the control cable clamps. For the Pitch-Trim Servo: disconnect the servo cable at the forward turnbuckle and aft terminal.
3. Use a socket or open-wrench to loosen and remove the servo attachment bolts.
4. Carefully remove the servo gearbox(es).
5. Remove the cable retention pins and ring (or cover) and then remove the servo cable from the capstan.

Reinstallation:

1. Ensure cable retention pins are oriented correctly. Follow the installation instructions provided in the respective servo installation drawing(s) listed in Table 1-2.
2. If no other maintenance is to be performed, reinstall the servo(s) per Section 6.11.

6.13 GCU 477

Removal:

1. Use a 3/32" hex drive tool to turn each of the four locking sockets ¼ turn counterclockwise until they reach their stops.
2. Disconnect backshell assembly from unit.

Reinstallation:

1. Inspect connector(s) for damaged pins.
2. Connect backshell assembly to unit.
3. Hold unit flush with the pedestal, ensuring locking stud alignment marks are in the vertical position.
4. Use a 3/32" hex drive tool to turn each of the four locking sockets ¼ turn clockwise. This may require applying a small amount of forward pressure to engage the ¼ turn sockets.
5. Configure and test the GCU 477 according to Section 7.10.

6.14 GMC 710

Removal:

1. Use a 3/32” hex drive tool to turn each of the four locking sockets ¼ turn counterclockwise until they reach their stops.
2. Disconnect backshell assembly from unit.

Reinstallation:

1. Inspect connector(s) for damaged pins.
2. Connect backshell assembly to unit.
3. Hold unit flush with the mounting bracket, ensuring locking stud alignment marks are in the vertical position.
4. Use a 3/32” hex drive tool to turn each of the four locking sockets ¼ turn clockwise. This may require applying a small amount of forward pressure to engage the ¼ turn sockets.
5. Configure and test the GMC 710 according to Section 7.11.

6.15 GWX 68

Removal:

1. Gain access by removing nose radome.
2. Disconnect backshell assembly from unit.
3. Use a 3/16” hex drive tool to remove each of the four mounting screws.

Reinstallation:

1. Inspect connector for damaged pins.
2. Hold unit flush with the radar mount.
3. Use a 3/16” hex drive tool to tighten each of the four mounting screws.
4. Connect backshell assembly to unit.
5. Configure and test the GWX 68 according to Section 7.12.1.

6.16 Configuration Module Removal & Replacement

Configuration modules (Item 1 shown below) are located in the following LRU harness connector backshells (Item 6): GDU 1040A PFD, GRS 77 AHRS, GDC 74B Air Data Computer, and the GEA 71 Engine/Airframe Unit. Refer to the Master Drawing List, listed in Table 1-2, for specific installation drawings.

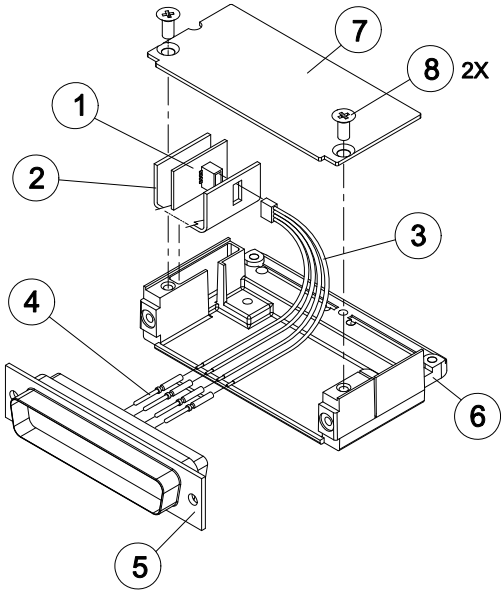


Figure 6-2, Configuration Module Installation

Table 6-1, Configuration Module Kit – 011-00979-00

Item	Description	Qty Needed	Garmin Part Number
1	Configuration Module PCB Board Assembly w/EEPROM & Temp Sensor	1	012-00605-00 or -02
2	Spacer, Config Module	1	213-00043-00
3	Cable, 4-Conductor Harness	1	325-00122-00
4	Pins, #22 AWG (HD)	5	336-00021-00

Removal:

1. Disconnect connector from LRU.
2. Remove 2 screws (8) from cover (7) and remove cover.
3. Unplug connector from configuration module (1).
4. Remove configuration module.

Installation:

1. Inspect connector for damaged pins (4).
2. Place configuration module (1) in position.
3. Insert connector into configuration module (1).
4. Assembly of the connector is the reverse of disassembly.
5. Continue to Section 6.16.1.

6.16.1 Configuration Module Checkout

If a GRS 77 AHRS Configuration Module is replaced:

All three GRS 77/GMU 44 calibration procedures must be performed. Proceed to Section 7.7.3.

If a GDC 74B Configuration Module is replaced:

Configuration settings must be reloaded to the GDC 74B per Section 3.9, then proceed to Section 7.6.1.

If a GEA 71 Configuration Module is replaced:

Proceed to Section 7.4.1.

If only the Master Configuration Module is replaced:

NOTE

New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other cards will no longer work as they will remain locked to the old System ID number.

1. Start the G1000 system in configuration mode.
2. Go to the Configuration Upload Page on PFD 1.
3. Press the UPDT CFG softkey and press ENT.

If both PFD 1 and Master Configuration Module are replaced:

NOTE

New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other cards will no longer work as they will remain locked to the old System ID number.

1. The entire G1000 system must be re-configured. Insert the correct G1000 software loader card into PFD 1.
2. Start the G1000 in configuration mode. Go to the System Upload Page on PFD 1.
3. See Section 3.9 for instructions on how to use the System Upload page. Check all configuration files and reload them.
4. After reloading configuration files, examine the G1000 installation for any installed configuration options. Options are listed in Section 3.9. Load optional files as necessary.
5. Continue to Section 8 and conduct the return to service checkout.

6.17 GEA 71 Backshell Thermocouple Removal & Replacement

The GEA 71 has a K-Type thermocouple (Item 1 shown below) installed in its backshell, in addition to the configuration module. The thermocouple is used in conjunction with the configuration module temperature sensor to compensate for temperature probe errors resulting from the dissimilar metals at the pin contacts.

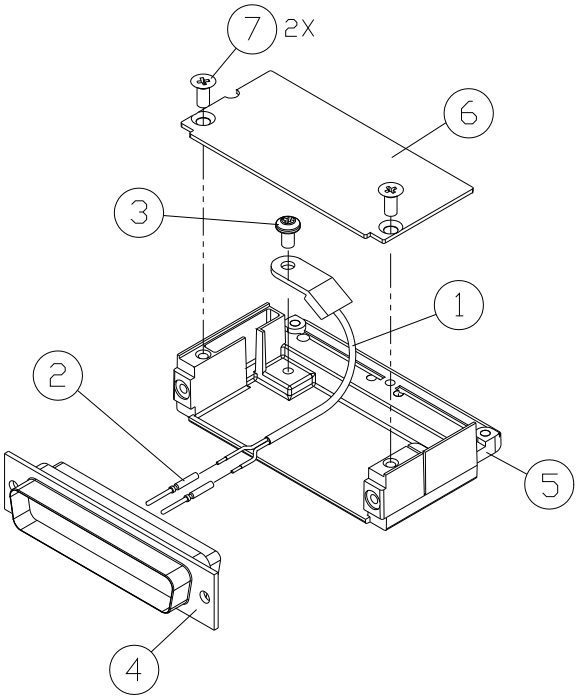


Figure 6-3, GEA Backshell Thermocouple

Table 6-2, Thermocouple Kit (011-00981-00)

Item #	Description	Qty. Needed	Garmin Part Number
1	3" Thermocouple, K type	1	925-L0000-00
2	Pins #22 AWG	2	336-00021-00
3	Screw	1	211-60234-08

Removal:

1. Remove GEA 71 per Section 6.4.
2. Remove GEA connector backplate.
3. Remove connector assembly J711 from the backplate.
4. Remove screws, item 7, and cover, item 6, from the backshell, item 5.
5. Unscrew thermocouple from boss on backshell. Extract the thermocouple pins from the connector.

Replacement:

1. Crimp pins, item 2, onto each of the thermocouple wires, item 1. Ensure that pre-stripped wire length is 1/8" prior to crimping.
2. Insert newly crimped pins and wires into the appropriate connector housing location, item 4, as specified by King Air 200/B200 Wiring Diagram, listed in Table 1-2.
3. Place thermocouple body, item 1, onto the backshell boss, item 5. Place the thermocouple as shown in Figure 6-3 so that the wires exit towards the bottom of the backshell.
4. Fasten thermocouple tightly to backshell using the provided screw, item 3.
5. Fasten cover, item 6, to backshell using screws, item 7.
6. Continue to Section 7.4.1 and verify that the ITT indications are valid on the MFD.

6.18 GPS/WAAS Antennas

Removal:

1. Gain access to the antenna coaxial cable connector by removing the cabin interior ceiling panel. Refer to the Antenna Install drawing listed in Table 1-2.
2. Disconnect the antenna coaxial cable.
3. Remove the antenna mounting screws.
4. Remove antenna.

Reinstallation:

1. Install antenna using retained mounting screws.
2. Connect the antenna coaxial cable.
3. Fillet seal around antenna. Refer to the Antenna Install drawing listed in Table 1-2.
4. Reinstall cabin interior ceiling panel.
5. Proceed to Section 7.3.1 GPS Signal Acquisition for testing.

6.19 Diversity Transponder Antenna

Removal:

1. Gain access to the antenna coaxial cable connector and mounting hardware by removing the cabin interior ceiling panel. Refer to the Antenna Install drawing listed in Table 1-2.
2. Disconnect the antenna coaxial cable.
3. Remove the two nuts and washers securing the antenna.
4. Remove antenna.

Reinstallation:

1. Install antenna using retained hardware.
2. Connect the antenna coaxial cable.
3. Fillet seal around antenna. Refer to the Antenna Install drawing listed in Table 1-2.
4. Reinstall cabin interior ceiling panel.
5. Proceed to Section 7.5.2 for testing of the GTX33D.

6.20 Iridium Antenna

Removal:

1. Gain access to the antenna coaxial cable connector by removing the aft cabin ceiling panel. Refer to the Antenna Install drawing listed in Table 1-2.
2. Disconnect the antenna coaxial cable.
3. Remove the antenna mounting screws.
4. Remove antenna.

Reinstallation:

1. Install antenna using retained mounting screws.
2. Connect the antenna coaxial cable.
3. Fillet seal around antenna. Refer to the Antenna Install drawing listed in Table 1-2.
4. Reinstall the aft cabin ceiling panel.
5. Proceed to Section 7.29 for testing of the GSR 56.

6.21 Wi-Fi Antenna

Removal:

1. Gain access to the antenna coaxial cable connector by opening the tail access door behind the aft pressure bulkhead. Refer to the Antenna Install drawing listed in Table 1-2.
2. Disconnect the antenna coaxial cable.
3. Remove the antenna mounting screws.
4. Remove antenna.

Reinstallation:

1. Install antenna using retained mounting screws.
2. Connect the antenna coaxial cable.
3. Fillet seal around antenna. Refer to the Antenna Install drawing listed in Table 1-2.
4. Secure the tail access door.
5. Proceed to Section 7.28 for testing of the GDL 59.

6.22 Signal Conditioners

Removal:

1. For Signal Conditioner No. 1, remove PFD1 from the instrument panel as per Section 6.1. For Signal Conditioner No. 2, remove PFD2 from the instrument panel as per Section 6.1.
2. Remove 3 top screws from Signal Conditioner rack.
3. Slide mounting tray out from rack and disconnect the unit connector. If needed, remove MFD as per Section 6.1 to access the Signal Conditioner connector.
4. Remove the four mounting bolts and remove the Signal Conditioner unit.

5. If planning to reinstall the same unit, it is not necessary to disconnect the ground strap from the unit ground stud. If replacing with a new unit, disconnect the ground strap from the removed unit and retain the ground strap and associated hardware for reinstallation on the new unit.

Reinstallation:

1. Reinstallation of the Signal Conditioners is the reverse of the removal.
   Note that the p/n 85-292-2 and 85-292-4 units are interchangeable.
   Reference the Main Instrument Panel Installation drawing, listed in Table 1-2, for more details.
2. Proceed to Section 7.4.1 for testing.

6.23 Instrument Panel Annunciators (Prop Synch and Standby Battery)

Removal:

1. Remove MFD from the instrument panel as per Section 6.1.
2. Using a M22885/108T8234 extraction tool, disconnect connector from the back of the switch.
3. Pull the pushbutton cap fully out of the switch body and allow the cap to rotate 90° where it is held by the retaining element.
4. While holding the retaining sleeve (back side of the instrument panel), loosen the two screws inside the switch body until the switch is free to come out.
5. Remove the mounting sleeve and switch from the instrument panel.

Reinstallation:

1. Reinstallation of the Prop Synch and Standby Battery switches is the reverse of the removal. Reference the Main Instrument Panel Installation drawing, listed in Table 1-2, for more details.
2. Press and hold the cockpit annunciator "Press To Test" switch located to the left of the annunciator panel, and verify the following:
   - For the Standby Battery Annunciator/Switch: STBY Battery Switch legends illuminates and reflects "STANDBY BATTERY" in white, "ARM" in green, and "ON" in amber.
   - For the Prop Synch Annunciator/Switch: Prop Synch Switch legends illuminates and reflects "PROP SYNC" in white, and "ON" in green.
3. Release cockpit annunciator "Press To Test" switch.
4. If further maintenance is not required, proceed to Section 8.

6.24 L-3 Avionics (BF Goodrich) PS-835(C or D Model) Emergency Battery

Removal:

1. Gain access to the forward avionics compartment in the nose of the aircraft.
2. Unscrew the knurled hold-down nut to allow it to move free of the unit.
3. Remove the unit from the rack.

Reinstallation:

1. Install the emergency battery in accordance with the Electrical Equipment Install, Nose Bay drawing (refer to Master Drawing List, listed in Table 1-2, for specific drawing number). Refer to the King Air 200 Series Maintenance Manual, listed in Table 1-2, for access requirements as needed.
2. If further maintenance is not required, proceed to Section 8.

6.25 Standby Airspeed Indicator

Removal:

1. Remove MFD per Section 6.1.
2. Disconnect pitot-static plumbing from the back of the standby airspeed indicator. Take necessary precautions to prevent foreign object debris from entering the pitot-static lines during maintenance.
3. Disconnect the electrical connector from the standby airspeed indicator.
4. Use a Phillips screwdriver to remove the attachment screws from the front of the standby airspeed indicator.
5. Remove the standby airspeed indicator.

Reinstallation:

1. Reinstallation of the standby airspeed indicator is the reverse of the removal. Reference the Main Instrument Panel Installation drawing, listed in Table 1-2, for more details.
2. If further maintenance is not required, proceed to Section 8.

6.26 Standby Altimeter

Removal:

1. Remove MFD per Section 6.1.
2. Disconnect pitot-static plumbing from the back of the standby altimeter. Take necessary precautions to prevent foreign object debris from entering the pitot-static lines during maintenance.
3. Disconnect the electrical connector from the standby altimeter.
4. Use a Phillips screwdriver to remove the attachment screws from the front of the standby altimeter.
5. Remove the standby altimeter.

Reinstallation:

1. Reinstallation of the standby altimeter is the reverse of the removal. Reference the Main Instrument Panel Installation drawing, listed in Table 1-2, for more details.
2. If further maintenance is not required, proceed to Section 8.

6.27 Standby Attitude Indicator

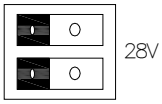
Ensure the standby attitude indicator gyro is not spinning—this may take 10 minutes or longer after the unit has been turned off. This unit is very delicate; handle like eggs. Refer to the 4200 Series Attitude Indicator Installation Manual, listed in Table 1-2, for more handling instructions.

Removal:

1. Remove MFD per Section 6.1.
2. Disconnect the electrical connector of the standby attitude indicator.
3. Use a 0.060" 6-Spline wrench to remove the knob from the front of the standby attitude indicator.
4. Use a Phillips screwdriver to remove the three attachment screws from the front of the standby attitude indicator.
5. Remove the standby attitude indicator.

Reinstallation:

1. Ensure the lighting control voltage switches on rear of unit are set for 28V.



2. Reinstallation of the standby attitude indicator is the reverse of the removal. Reference the Main Instrument Panel Installation drawing, listed in Table 1-2, for more details.
3. If further maintenance is not required, proceed to Section 8.

6.28 Nose Avionics Bay Cooling Fans

Removal:

1. Gain access into the nose avionics equipment bay.
2. Disconnect the cooling fan hoses from the cooling fan. Take necessary precautions to prevent any foreign debris from entering the fan hoses during maintenance.
3. Disconnect the electrical connector of the cooling fan.
4. Use a Phillips screwdriver to remove the attachment screws from the cooling fan.
5. Remove the cooling fan.

Reinstallation:

1. Reinstallation of the avionics cooling fan is the reverse of the removal. Reference the Electrical Equipment Install, Nose Bay drawing, listed in Table 1-2, for more details.
2. If further maintenance is not required, proceed to Section 8.

6.29 GDU Cooling Fans

Removal:

1. Remove the display associated with the cooling fan, per Section 6.1.
2. Disconnect the electrical connector of the cooling fan.
3. Use a Phillips screwdriver to remove the attachment screws from the cooling fan.
4. Remove the cooling fan.

Reinstallation:

1. Reinstallation of the Sandia GDU cooling fan is the reverse of the removal. Reference the Main Instrument Panel Installation drawing, listed in Table 1-2, for more details.
2. If further maintenance is not required, proceed to Section 8.

6.30 GTS 8XX Traffic Unit

CAUTION:

After any maintenance or modification is made to the GTS 8XX TAS/TCAS cables such as replacing a connector or entire cable, be sure to adhere to all of the specifications and limitations such as minimum and maximum cable attenuation, attenuation balance between cables, phase matching etc.

Removal:

1. Gain access to the left forward avionics compartment in the nose of the aircraft.
2. Disconnect the eight coax "quick-lock" connectors.
3. Disconnect the three electrical connectors.
4. Unlock the unit from the rack by loosening the ratcheting latch mechanism.
5. Remove the unit from the rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Insert the unit into the installation rack.
3. Lock the unit into the rack by using the ratcheting latch mechanism.
4. Reconnect the eight coax "quick-lock" connectors and the three electrical connectors.
5. Close access to the left forward avionics compartment.
6. Configure the GTS 8XX per Section 3.17 and test per Section 7.26.

6.31 GPA 65 PA/LNA Unit

Removal:

1. Remove cabin interior to access FS 158 at WL 119 on the left side of the fuselage. Reference the Antenna Install drawing listed in Table 1-2 for more details.
2. Disconnect the eight coax "quick-lock" connectors.
3. Disconnect the electrical connector.
4. Remove the four mounting screws that hold the unit to the installation brackets.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Reattach the unit to the mounting brackets reusing existing hardware.
3. Connect the eight coax connectors. Note the color coded bands which match the mating connectors on the unit.
4. Reconnect the electrical connector pigtail.
5. Ensure that all connectors (coax and electrical) are locked in place.
6. Reinstall cabin interior.

7. No configuration is required for the GPA 65. Test the GTS 8XX per Section 7.26.

6.32 GA 58 Traffic Antennas

Removal:

1. Gain access to the antenna coaxial cable connectors by removing the cabin interior ceiling panel. Refer to the Antenna Install drawing listed in Table 1-2.
2. Disconnect the four coax "quick-lock" connectors.
3. Remove the antenna mounting screws.
4. Remove antenna.

Reinstallation:

1. Install antenna using retained mounting screws.
2. Connect the four coax connectors. Note the color coded bands which match the mating connectors.
3. Fillet seal around antenna. Refer to the Antenna Install drawing listed in Table 1-2.
4. Reinstall cabin interior ceiling panel.
5. Test the GTS 8XX per Section 7.26.

6.33 GDL 59 Wi-Fi Datalink

Removal:

1. Gain access by removing the cabin center floor panel at the main entry door.
2. Detach the two rack mount angles from the remote equipment shelf. Retain all mounting hardware.
3. Remove the Philips head screw which holds the locking lever down.
4. Lift the locking lever up to unlock the unit from the mounting rack.
5. Remove the unit from the mounting rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Insert the unit into the installation rack.

   Do not use excessive force when inserting the GDL 59 into the rack. This may cause damage to occur to the connectors, unit, and/or unit rack. If heavy resistance is felt during installation, stop! Remove the GDL 59 and identify the source of resistance. The rear plate is designed to float in the unit rack. Check to ensure the rear plate is not bound by the connector harness.
3. Lock the GDL 59 in place using the lever-locking handle. Fasten the handle to the GDL 59 body using the provided Phillips screw.

   CAUTION:

   Start the handle screw into the hole carefully to avoid cross-threading. Do not apply torque in excess of 14 in-lbs to the handle screw. The application of torque exceeding 14 in-lbs to this screw will damage the LRU case and/or retaining hardware.
4. Reinstall the two rack mount angles on the remote equipment shelf using retained hardware.

5. Reinstall the cabin center floor panel.
6. If new unit is installed, register with Garmin Flight Data Services per Section 7.27.
7. Configure the GDL 59 per Section 3.21 and 3.23. Test the GDL 59 per Section 7.28.

6.34 GSR 56 Satellite Receiver

Removal:

1. Gain access by removing the cabin center floor panel at the main entry door.
2. Detach the two rack mount angles from the remote equipment shelf. Retain all mounting hardware.
3. Unlock the unit from the rack by loosening the ratcheting latch mechanism.
4. Remove the unit from the rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Insert the unit into the installation rack.

CAUTION:

Do not use excessive force when inserting the GDL 56 into the rack. This may cause damage to occur to the connectors, unit, and/or unit rack. If heavy resistance is felt during installation, stop! Remove the GDL 56 and identify the source of resistance.

3. Lock the unit into the rack by using the ratcheting latch mechanism.
4. Reinstall the cabin center floor panel.
5. If new unit is installed, register with Garmin Flight Data Services per Section 7.27.
6. No configuration is required for the GSR 56. Test the GSR 56 according to Section 7.29.

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7 G1000 Equipment Configuration & Testing

This section provides procedures to be followed after a piece of G1000 equipment is replaced. At the beginning of each LRU section, instructions are given to guide the technician for various removal/replacement scenarios. These instructions define necessary procedures to be followed for situations where original equipment was reinstalled as well as for situations where new equipment (new serial number) is installed.

CAUTION

Remove Supplemental Database Cards from the lower slot of all displays before loading software into any unit. Not removing the cards may corrupt them. Replacing corrupted database cards are not covered under warranty.

NOTE

Garmin recommends the use of SanDisk or Toshiba brand SD cards to load G1000 software and configuration files. If another brand of card is used, and software loading problems occur, replace the card with a SanDisk or Toshiba brand card and reattempt the software load.

WARNING

Connect a ground power unit to the aircraft for software loading. Do not rely on only the aircraft batteries to prevent loss of power during the software loading process. DO NOT ALLOW POWER TO BE REMOVED FROM THE SYSTEM WHEN LOADING SOFTWARE! Remove power only when told to do so by the following procedure. As a general rule all displays should be in the same mode (configuration or normal), unless instructed differently.

7.1 GDU 1040/1500 MFD & PFD

Original Display Reinstalled

If the removed display(s) are re-installed in their original positions, no software or configuration loading is required. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the PFD/MFD Test procedure.

Original PFD Displays Installed in Opposite Locations for Troubleshooting

If the PFD 1 and PFD 2 are installed in opposite positions, no software or configuration loading is required. Continue to the PFD/MFD Test procedure.

New Repair or Exchange Display(s) Installed

If a new, repaired or exchange GDU 1040A or GDU 1500 is installed, the correct software and configuration files must be loaded to the unit. See Section 3.9. If ChartView or TAWS were previously installed, these must be reactivated. See Sections 3.29 and 3.30, respectively. If any other options were previously installed, these must also be reactivated per Section 3.9. Then continue to the PFD/MFD Test procedure.

7.1.1 PFD/MFD Test

1. Allow displays to initialize for ~1 minute.
2. Check that all COM/NAV display fields are valid in the top corners of both PFDs.
3. Check that attitude, heading, altitude, airspeed, vertical speed and OAT fields are valid within 2 minutes of power up on both PFDs.
4. Press the SENSOR softkey on each PFD and switch between ADC1 and ADC2. Verify that data from both GDC 74Bs is valid on both displays.
5. Press the SENSOR softkey on each PFD and switch between AHRS1 and AHRS2. Verify that data from both GRS 77s is valid on both displays.
6. Check that the engine instrument fields are valid on the MFD.

Figure 7-1, G1000 Normal Mode Check

7. Push the red DISPLAY BACKUP button on the pilot-side GMA 1347D. Verify that the pilot-side PFD and MFD displays enter reversion mode. MFD should have valid altitude, airspeed, vertical speed, COMM1, COMM2, NAV1, NAV2 and engine instruments.
8. De-activate pilot-side reversion mode by pushing the DISPLAY BACKUP button. Verify PFD 1 and MFD return to normal display modes.
9. Repeat Step 1 using GMA2. Ensure that PFD 2 and MFD enter reversion mode and MFD displays valid altitude, airspeed, vertical speed, COMM1, COMM2, NAV1, NAV2 and engine instruments.
10. De-activate co-pilot's side reversion mode by pushing the DISPLAY BACKUP button. Verify PFD 2 and MFD return to normal display modes.
11. Select the TAWS page on the MFD.
12. Verify that the title at the top of the page reads "MAP – TAWS-B" or "MAP-TAWS-A". If TAWS has not been enabled, the title will read "MAP – TERRAIN PROXIMITY" or "MAP – TERRAIN".
13. Press the MENU button and select "Test TAWS" from the pop-up menu.
14. After the TAWS test has completed, verify that "TAWS System Test Okay" is heard over the cockpit speaker.
15. If no other service is to be performed, perform final return-to-service test as specified in Section 8.

7.2 GMA 1347D Audio Panel

Original GMA 1347D Reinstalled

No software/configuration loading or testing is required if the removed GMA 1347D is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the final return-to-service checks in Section 8.

Original GMA 1347D Installed in Opposite Locations for Troubleshooting

If the original GMA #1 and GMA #2 are installed in opposite locations, configuration loading is required. See Section 3.9, and then continue to the GMA 1347D Test (Section 7.2.1).

New, Repaired or Exchange GMA 1347D Installed

If a new, repaired or exchanged GMA 1347D is installed, the correct software and configuration files must be loaded to the unit. See Section 3.9, and then continue to the GMA 1347D Test (Section 7.2.1).

7.2.1 GMA 1347D Test

Except for marker beacon operation, an in-aircraft checkout may be performed in the aircraft with known good microphone, headset, and speaker.

Intercom System (ICS) Check

1. Ensure that the MAN SQ key is off (no light).
2. Adjust GMA1 and GMA2 ICS volume to a comfortable level.
3. Plug in a headset at each COCKPIT ICS position. One at a time, plug a headset into each left and right CABIN ICS jack location (if installed)(one headset on right, one headset on left).
4. Verify the following:
   - Two-way communication between each CABIN ICS jack position.
   - CABIN ICS position cannot hear the pilot and copilot.
   - CABIN ICS positions cannot be heard by the pilot or copilot.
5. On GMA1 select COM1 MIC and AUDIO.
6. Ensure INTR COM is deselected on GMA1 or GMA2. Verify an active (green) COM1 frequency is displayed on both PFDs.
7. On GMA1 or 2 select PA and verify the PA select annunciator is illuminated on GMA1 and GMA2. Verify COM1 active frequency is displayed white.
8. Initiate passenger address using pilot's headset boom mic by keying the pilot's PTT. Verify the following:
   - Clear PA audio can be heard over cabin speaker and CABIN ICS headsets
   - PA selected annunciator on GMA1 flashes ~ once per second during PA address.
9. Repeat Step 8 using pilot hand mic.
10. Initiate passenger address using copilot's headset boom mic by keying the copilot's PTT. Verify the following:
    - Clear PA audio can be heard over cabin speaker and CABIN ICS headsets
    - PA selected annunciator on GMA1 flashes ~ once per second during PA address.
11. Repeat Step 10 using copilot hand mic.

Transceiver Operational Check

Perform a ramp test radio check by exercising the installed transceivers, microphone, microphone key and audio over the headphones and speaker. Verify that communications are clear and PTT operation is correct for each pilot position.

1. On the pilot's audio panel, select the audio source corresponding to each installed avionics unit (i.e. NAV1, NAV2, COM1, COM2, ADF and DME) and check for audio over the pilot's headset.
2. Press the SPKR key on pilot's audio panel and verify that the selected audio is heard over the pilot's speaker.
3. On the copilot's audio panel, select the audio source corresponding to each installed avionics unit (i.e. NAV1, NAV2, COM1, COM2, ADF and DME) and check for audio over the copilot's headset.
4. Press the SPKR key on copilot's audio panel and verify that the selected audio is heard over the copilot's speaker.

Failsafe Operation Check – GMA 1347D #1

1. Turn the GMA 1347D #1 off by pulling the AUDIO NO 1 circuit breaker. This directs all COM 1 phone audio, MIC audio and MIC key to the pilot's position.
2. Check the failsafe operation by exercising the COM 1 boom mic, hand mic, microphone key and audio over the headphones. All volume control for the COM audio should be through the PFD volume control. Verify proper operation of COM 1 using the failsafe operation.
3. Close the AUDIO NO 1 circuit breaker to continue testing.

Failsafe Operation Check – GMA 1347D #2

1. Turn the GMA 1347D #2 off by pulling the AUDIO NO 2 circuit breaker. This directs all COM 2 phone audio, MIC audio and MIC key to the co-pilot's position.
2. Check the failsafe operation by exercising the COM 2 boom mic, hand mic, microphone key and audio over the headphones. All volume control for the COM audio should be through the PFD volume control. Verify proper operation of COM 2 using the failsafe operation.
3. Close the AUDIO NO 2 circuit breaker to continue testing.

Marker Beacon Test

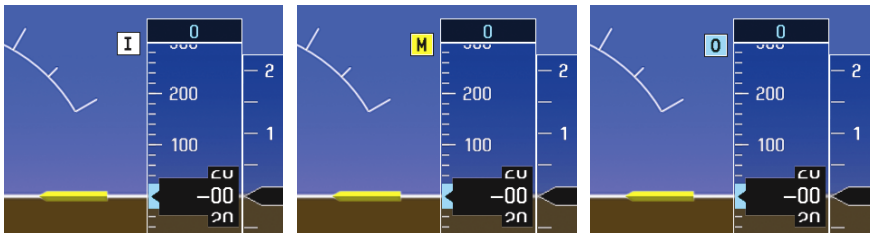


Figure 7-2, Marker Beacon Symbology

1. Using a ramp tester, simulate the outer marker, middle marker and inner marker signals by following the test equipment manufacturer's instructions. Verify that each marker audio signal is present over the pilot and co-pilot headphones and speaker.
2. Verify that the outer, middle, and inner annunciations appear on PFD 1 and PFD 2 when the corresponding signal is applied. Marker beacon annunciations appear at the upper left corner of the altitude indicator on the PFD (Figure 7-2). Operate the MKR MUTE key on the #1 and #2 GMA 1347D and ensure that the audio signal is muted.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.2.2 Landing Gear Aural Alert Check

This check should be conducted in conjunction with the Phase 2 and Phase 4 Landing Gear Retraction, Warning Horn check, in the existing King Air Maintenance Program.

NOTE

This procedure is applicable only to aircraft equipped with a tone generator as part of the aircraft audio system. Refer to the appropriate aircraft wiring diagrams to determine if a tone generator is installed.

This check can be accomplished in conjunction with the Weight on Wheels and Low Speed Awareness Band Test in Section 7.22.

1. Conduct the Landing Gear Retraction, Warning Horn check as stated in the King Air 200 Series Maintenance Manual, listed in Table 1-2.
2. Verify that the aural tone is played through the G1000 audio system and through both cockpit speakers.

7.2.3 XM Audio Suppression Check

This procedure is applicable only to aircraft that have XM radio subscriptions.

WARNING

The following steps require movement of the landing gear. Ensure aircraft is safe for the operation of the landing gear before proceeding.

1. Jack aircraft to allow operation of landing gear (reference King Air 200 Series Maintenance Manual Chapter 7-00-00).
2. Ensure both left and right throttles are at IDLE position.
3. While monitoring pilot and copilot XM audio, retract landing gear to the full up and locked position and verify the following:
   - landing gear warning horn is active
   - XM audio is muted in the pilot and co-pilot stations
4. Increase both left and right throttles forward of IDLE position (towards takeoff position) and verify the following:
   - landing gear warning horn is not active
   - XM audio can be heard (For aircraft not equipped with a tone generator, deselect mute softkey or adjust XM volume to restore XM audio)
5. Extend landing gear to the full down and locked position and return both throttles to idle position.
6. Remove aircraft from jacks.
7. Ensure STALL WARN circuit breaker is closed.
8. While monitoring pilot and copilot XM audio, press the STALL WARN TEST switch and verify the following:
   - Stall warning tone is active
   - XM audio is muted in the pilot and co-pilot stations
9. Release the STALL WARN TEST switch and verify the following:
   - Stall warning tone is not active.
   - XM audio can be heard (For aircraft not equipped with a tone generator, deselect mute softkey or adjust XM volume to restore XM audio.)

7.3 GIA 63W Integrated Avionics Unit

Original GIA 63W(s) Reinstalled

No software or configuration loading is required if the removed GIA is re-installed in its original position (GIA1 and GIA2 in their original racks). This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the return-to-service checks in Section 8.

Original GIA 63Ws Swapped for Troubleshooting

No software loading is required if the originally installed GIA units are re-installed in opposite positions (GIA1 and GIA2 in opposite unit racks). However, configuration loading is required. See Section 3.9, and then continue to the GIA 63W Test (Section 7.3.1).

New, Repaired or Exchange GIA 63W(s) Installed

If a new, repaired or exchange GIA 63 is installed, the correct software and configuration files must be loaded to the unit. See Section 3.9, and then continue to the GIA 63W Test (Section 7.3.1).

7.3.1 GIA 63W Test

GPS Signal Acquisition

Figure 7-3, AUX – GPS STATUS Page (MFD)

The GIA 63W units should normally acquire a GPS navigation solution within 5 to 10 minutes of startup, provided the aircraft is outside (or indoors with a GPS repeater). Select the GPS STATUS page on the MFD (4th page in AUX group). Two softkeys on the bottom of the display allow the user to toggle between GPS 1 and GPS 2. Verify that both receivers show 3D DIFF NAV on the MFD.

Continue to the VHF COM Interference test.

NOTE

It may be necessary to temporarily disable or move away from GPS repeaters while testing, as repeaters may adversely affect GPS receiver performance.

VHF COM Interference Test

This test must be conducted outside. Use of a GPS repeater inside a hangar may result in a failed test. This procedure assumes that the system is currently set to 25 kHz COM channel spacing. Once the signal acquisition test has been completed successfully, perform the following steps:

1. On the MFD, monitor GPS signal strength bars on the AUX – GPS STATUS page.
2. On the PFD, ensure that the CDI is set to GPS. If it is not, press the 'CDI' softkey until GPS ENR is displayed.
3. Verify that the GPS "INTEG" flag is out of view.
4. Select 121.150 MHz on the No. 1 COM transceiver.
5. Transmit for a period of 35 seconds while monitoring GPS 1 signal strength levels.
6. During the transmit period, verify that the GPS "INTEG" flag does not come into view on the PFD and verify that GPS 1 does not lose a 3-D navigation solution on the MFD.
7. Repeat steps 5 and 6 and re-transmit while monitoring GPS 2 signal levels on the MFD.
8. Repeat steps 4 through 7 for each of the following frequencies:
   - 121.175 MHz
   - 121.200 MHz
   - 131.250 MHz
   - 131.275 MHz
   - 131.300 MHz
9. Repeat steps 4 through 8 for the No. 2 COM transceiver (GIA2).
10. On the MFD, select the AUX – SYSTEM SETUP page.
11. Under the COM CONFIG field, change the COM channel spacing from 25 kHz to 8.33 kHz.
12. Go back to the AUX – GPS STATUS page.
13. Select 121.185 MHz on the No. 1 COM transceiver.
14. Transmit for a period of 35 seconds while monitoring GPS 1 signal strength levels.
15. During the transmit period, verify that the GPS "INTEG" flag does not come into view on the PFD and verify that GPS 1 does not lose a 3-D navigation solution on the MFD.
16. Repeat steps 14 and 15 and re-transmit while monitoring GPS 2 signal levels on the MFD.
17. Repeat steps 14 through 16 for each of the following frequencies:
    - 121.190 MHz
    - 130.285 MHz
    - 131.290 Mhz
18. Repeat steps 14 through 17 for the No. 2 COM transceiver (GIA2).
19. On the MFD, select the AUX – SYSTEM SETUP page and change the COM channel spacing back to 25 kHz.

Continue to the VOR/LOC/GS Test.

VOR/LOC/GS Test

Check the VOR, ILS, and Glideslope functions with ramp test equipment. Operate the equipment according to the test equipment manufacturer's instructions. Adjust the RF signal to a level adequate to perform the test. Select the appropriate HSI source by using the CDI softkey.

NOTE

The PFD HSI does not show a course deviation bar unless a valid VHF NAV frequency is tuned.

GFC 700 VOR/LOC/GS Test

1. Ensure FD is coupled to PFD1 as indicated by a left pointing arrow next to the AFCS mode controller XFR button.
2. Simulate a VOR signal on a radial equivalent to the aircraft heading. Tune the NAV 1 and NAV 2 receivers to the simulation frequency.
3. Set the HSI on PFD1 to VOR1 by pressing the CDI soft key until VOR1 is selected. Set the HSI on PFD2 to VOR2 by pressing the CDI soft key until VOR2 is selected. Rotate CRS1 and CRS2 knobs to set VOR1 and VOR2 course pointers to aircraft heading. (CDI Synchronization must be set to OFF on the AUX-SYSTEM SETUP 1 page on the MFD.)
4. Verify full scale deflection of VOR1 and VOR2 CDI by varying CRS1 and CRS2 selected course at least 10° left and right. Reset course pointers to aircraft heading.
5. Engage the autopilot and press the NAV key on the AFCS mode controller. Using the CRS1 knob alter course by 10° to the right. Verify the flight director and aircraft controls respond by flying to the VOR course. Repeat to the left.
6. Couple FD to PFD2 by pressing the XFR button on the AFCS mode controller. Verify FD is coupled right as indicated by a right pointing arrow on the AFCS mode controller next to the XFR button. Repeat step 5 using CRS2 knob while coupled to PFD2.
7. Set CRS1 and CRS2 course pointers to aircraft heading.
8. Simulate a Localizer/Glideslope signal. Tune this signal on NAV 1 and NAV 2 receiver. Set the PFD1 HSI to LOC1 and PFD2 HSI to LOC2 by pressing CDI soft key until LOC1 and LOC2 is selected. Use the test equipment to center the deviation bars (localizer and glideslope) on PFD1 and PFD2.
9. Press the APR key on the AFCS mode controller. Verify that the LOC and PIT annunciations are green and ALTS and GS are white on PFD1 and PFD2. Apply right/left and up/down localizer/glideslope signals using the test equipment. Verify that the Flight Director and flight controls respond appropriately.
10. Couple FD to PFD1 by pressing the XFR button on the AFCS mode controller. Verify FD is coupled to PFD1 as indicated by a left pointing arrow on the AFCS mode controller next to the XFR button.
11. Repeat step 9 while coupled to PFD1.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.4 GEA 71 Engine/Airframe Unit

Original GEA 71 Reinstalled

No software or configuration loading is required if the removed GEA 71 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the return-to-service checks in Section 8.

Original GEA 71 Installed in Opposite Locations for Troubleshooting

No software loading is required if the original GEA units are installed in opposite locations (GEA #1 and GEA #2 in opposite unit racks). Continue to the GEA 71 Test (Section 7.4.1).

New, Repaired or Exchange GEA 71 Installed

If a new, repaired or exchange GEA 71 is installed, the correct software and configuration files must be loaded to the unit. See Section 3.9, and then continue to the GEA 71 Test (Section 7.4.1).

7.4.1 GEA 71 Test

On the MFD (normal mode), check the indication for each of the sensor or monitor inputs with the aircraft engines off.

In general, verify all engine and system instruments show valid static normal values and markings, with no red Xs or erratic indications. Reference Figure 7-4 for normal engine instrument markings (figure may not reflect actual aircraft installation). If necessary, reference Sections 7.4.2, 7.4.3 and 7.4.4 for additional tests to verify instrument readings.

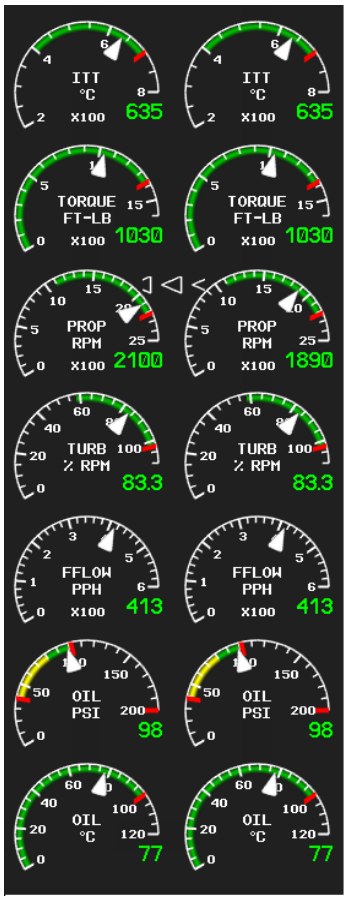


Figure 7-4, Normal Engine Instrument Markings (MFD)

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.4.2 GEA Engine Indication Checks

Perform engine indicating systems checks for the following left and right engine indications: Reference King Air 200 Series Maintenance Manual, Chapter 77-00-00, "Engine Indicating – Maintenance Practices".

- ITT
- N1
- N2
- Torque

7.4.3 GEA Fuel Flow Indication Functional Check

The special tools and equipment listed in Table 7-1 are provided for reference only and are not specifically required. Any product conforming to the specification listed may be used. It is the responsibility of the technician or mechanic to determine the applicable specification prior to testing.

Table 7-1, Fuel Flow Indication Special Equipment

Name	Requirement
Decade Box	0-1k ohms
Signal Generator	0-10Vdc / 0 – 1k Hz

The following steps are required to be completed on both engines as necessary.

1. Remove the engine cowling (Ref. King Air 200 Series Maintenance Manual, Chapter 71-10-00) to gain access to the engine MT5 fuel flow transmitter connector (P6).

2. Disconnect the P6 connector from the fuel flow transmitter.

3. Connect the Decade Box, set to a resistance of 1000 Ω, to pins C and D of the P6 connector.

4. Connect the Signal Generator to pins A (+) and B (-) of the P6 connector.

5. Apply external power to aircraft.

6. Set the BATT and AVIONICS MASTER PWR switches to ON.

7. Inject a 25 mV P-P signal with the signal generator and simulate the frequencies specified in the table below.

8. Observe MFD in normal mode and verify fuel flow indications match those values listed in Table 7-2.

Table 7-2, Fuel Flow Test Points

Test Point (Hz)	Indication (PPH)
0	0
140	100
561	400
841	600

7.4.4 GEA Oil Pressure Indication Functional Check

The special tools and equipment listed in Table 7-3 are provided for reference only and are not specifically required. Any product conforming to the specification listed may be used. It is the responsibility of the technician or mechanic to determine the applicable specification prior to testing.

Table 7-3, Oil Pressure Indication Special Equipment

Name	Requirement
Signal Generator	0-10Vdc / 0 – 1k Hz

The following steps are required to be completed on both engines as necessary.

1. Remove the engine cowling (Ref. King Air 200 Series Maintenance Manual, Chapter 71-10-00) to gain access to the engine Oil Pressure Transmitter connector (P12).
2. Disconnect the P12 connector from the Oil Pressure Transmitter.
3. Connect the Signal Generator to pins A (-) and B (+) of the P12 connector.
4. Apply external power to aircraft.
5. Set the BATT and AVIONICS MASTER PWR switches to ON.
6. Inject a DC signal with the signal generator to the values specified in the table below.
7. Observe MFD in normal mode and verify Oil Pressure indications match those values listed in Table 7-4.

Table 7-4, Oil Pressure Test Points

Test Point (VDC)	Indication (PSI)
0	0
1.25	50
2.50	100
3.75	150
5.00	200

7.5 GTX 33( ) Transponder

Original GTX 33( ) is Reinstalled

No software or configuration loading is required if the removed GTX 33 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to GTX 33 Test (Section 7.5.2).

Original GTX 33( ) Installed in Opposite Locations for Troubleshooting

No software loading is required if the original GTX #1 and GTX #2 are installed in opposite locations. Continue to Transponder Configuration (Section 7.5.1).

New, Repaired or Exchange GTX 33( ) is Installed

If a new, repaired or exchange GTX 33( ) is installed, the correct software and configuration files must be loaded to the unit per Section 3.9. Continue to Transponder Configuration (Section 7.5.1).

7.5.1 Transponder Configuration

1. If not applied, apply power to the G1000 system.
2. With PFD1 in configuration mode, select the GTX page group, then select the TRANSPONDER CONFIGURATION page on PFD1.
3. The 'ADDRESS TYPE' default is 'US TAIL'. To enter a non-US Mode-S registration number set the 'ADDRESS TYPE' field to 'HEX ID'.
4. Activate the cursor and highlight the 'MODE S ADDRESS' field. Use the small/large FMS knobs to enter the US aircraft registration number or other Mode-S registration number.

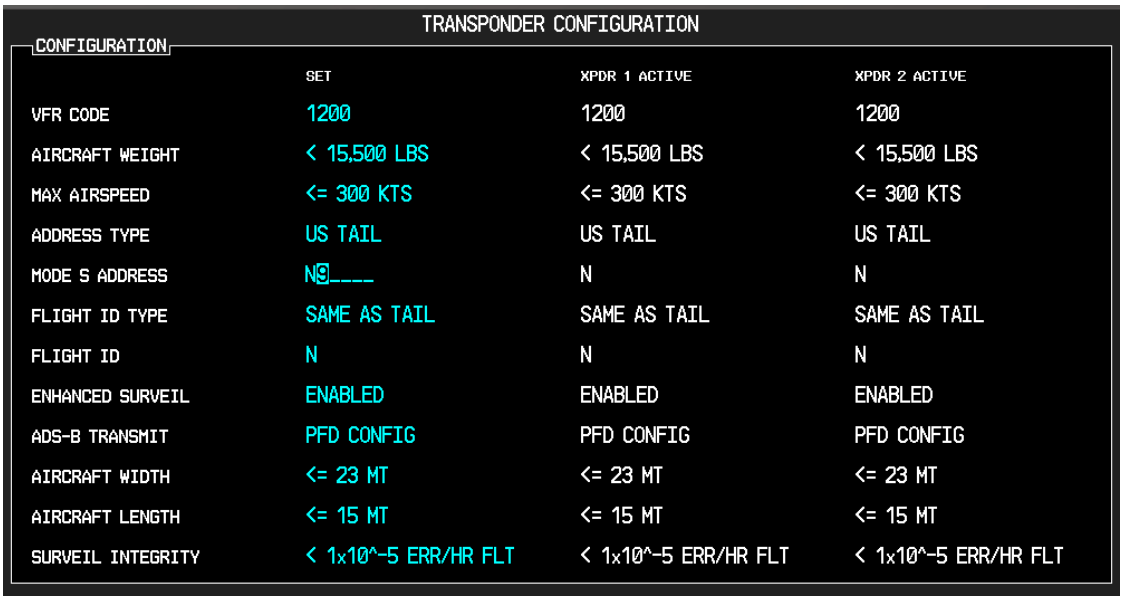


Figure 7-5, Aircraft Registration

5. For US registered aircraft, the 'FLIGHT ID TYPE' field should be set to 'SAME AS TAIL'. For other aircraft, the 'FLIGHT ID TYPE' field should be set to 'CONFIG ENTRY' or 'PFD ENTRY'.

NOTE

The CONFIG ENTRY setting requires the Aircraft Registration/ID number to be entered once in the '**FLIGHT ID**' field. The PFD ENTRY setting allows the pilot to enter the Aircraft Registration/ID number from the PFD, via the '**TMR/REF**' softkey.

6. After each configuration setting change, press the ENT key to configure the transponders.
7. Press the ENT key on PFD1 to acknowledge prompt.
8. After completing transponder configuration, deactivate the cursor.

7.5.2 GTX 33( ) Test

Operation of the GTX 33 or GTX 33D Mode-S transponder is accomplished using PFD 1, PFD 2 or the MFD. Refer to G1000 in King Air 200/B200 Cockpit Reference Guide, listed in Table 1-2, for basic operation.

The integrated transponder/altitude reporting system must be verified in accordance with Title 14 of the Code of Federal Regulations (14 CFR) §§ 91.411 and 91.413, **every 24 calendar months**, or any time the transponder is removed. This test requires the use of a Mode S ramp generator. Specific instructions for operating the ramp tester are contained in the applicable operator's manual. Refer to 14 CFR Part 43 Appendices E and F for testing criteria.

Note that for GTX 33D units, the aircraft must be put on jacks to simulate an in-air condition in order to test the Mode S diversity transmission channel isolation.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.6 GDC 74B Air Data Computer

Original GDC 74B is Reinstalled

No software or configuration loading is required if the removed GDC 74B is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to GDC 74B Test (Section 7.6.1).

Original GDC 74B Installed in Opposite Locations for Troubleshooting

No software loading is required if the original GDC #1 and GDC #2 are installed in opposite locations. Continue to GDC 74B Test (Section 7.6.1).

New, Repaired or Exchange GDC 74B is Installed

If a new, repaired or exchange GDC 74B is installed, the correct software and configuration files must be loaded to the unit. See Section 3.9, and then continue to GDC 74B Test (Section 7.6.1).

New GDC 74B Configuration Module is Installed

The correct configuration files must be loaded if the GDC 74B configuration module has been replaced. See Section 3.9, and then continue to GDC 74B Test (Section 7.6.1).

7.6.1 Air Data Test (GDC 74B)

The G1000 system must be maintained in accordance with the G1000 System Maintenance Manual listed in Table 1-3 and appropriate regulations. When the GDC 74B is tested in accordance with 14 CFR Part 43, Appendix E, note the following exceptions:

- For paragraph (b)(1)(i) Scale Error, use Table 7-5 of this section instead of Appendix E, Table I
- Do not perform paragraph (b)(1)(iv) Friction
- Do not perform paragraph (b)(1)(vi) Barametric Scale Error

The following Air Data Test is to be performed in addition to or in conjunction with any other regulated tests. This test must be performed on both pilot and copilot systems with a calibrated Air Data Test Set (ADTS) with a combined accuracy/repeatability specification of less than ±20 feet for the test altitude range.

1. Perform pitot static system leak check of each system as described in the King Air 200 Series Maintenance Manual, 34-00-00, with the following changes:
   a. For the pitot leak check, set the air data test unit to an indicated airspeed of 200 knots with the static system vented to ambient pressure conditions (ground). Pitot leak rate is not to exceed 1 knot in 1 minute.
   b. For the static leak check, set the air data test set to 30,000 feet and an indicated airspeed of 120 knots. Static leak rate is not to exceed 300 feet in 1 minute.
2. Connect the pitot/static tester to the aircraft left and right pitot and static ports. Note that the standby altimeter and airspeed indicator are connected to the copilot side pitot and static lines.
3. Verify that the PFD1 altimeter baro setting is set to 29.92 in Hg (1013.25 mb).
4. Start PFD1 in configuration mode and navigate to the GRS page. The values for altitude and airspeed are shown on the AHRS/AIR DATA INPUT table as B ALT and IAS for both AIR DATA 1 and AIR DATA 2.
5. Simulate the altitudes and airspeeds for each condition shown in Table 7-5. Wait for ADTS to report that target values have been achieved.
6. On Table 7-5, record the altitude (B ALT) displayed on PFD1 for AIR DATA 1 and AIR DATA 2 for each condition.
7. On Table 7-5, record the airspeed (IAS) displayed on PFD1 for AIR DATA 1 and AIR DATA 2 for each condition.
8. Verify that the indicated altitudes and airspeeds are within allowable tolerances.
9. File the results with the aircraft maintenance records.

If either the pilot or copilot air data system does not meet the tolerances specified, have maintenance checks performed on the air data system or the pitot/static system.

Table 7-5, Air Data System Test

Test Point	Altitude (FT)			Airspeed (KIAS)	
	Nominal Altitude	AIR DATA 1	AIR DATA 2	AIR DATA 1	AIR DATA 2
ALT / AS		Tolerance	Tolerance	Tolerance	Tolerance
		Actual	Actual	Actual	Actual
0 / 0	0	+/-20	+/-20	+/-2	+/-2
0 / 99	0	+/-20	+/-20	+/-2	+/-2
0 / 132	0	+/-20	+/-20	+/-2	+/-2
0 / 198	0	+/-20	+/-20	+/-2	+/-2
1000 / 50	1000	+/-20	+/-20	+/-2	+/-2
2000 / 50	2000	+/-25	+/-25	+/-2	+/-2
4000 / 80	4000	+/-25	+/-25	+/-2	+/-2
8000 / 80	8000	+/-30	+/-30	+/-2	+/-2
8000 / 260	8000	+/-30	+/-30	+/-2	+/-2
10000 / 120	10000	+/-30	+/-30	+/-2	+/-2
11000 / 120	11000	+/-35	+/-35	+/-2	+/-2
13000 / 150	13000	+/-40	+/-40	+/-2	+/-2
14000 / 150	14000	+/-40	+/-40	+/-2	+/-2
16000 / 180	16000	+/-45	+/-45	+/-2	+/-2
18000 / 210	18000	+/-45	+/-45	+/-2	+/-2
19000 / 138	18983	+/-47	+/-47	+/-2	+/-2
19000 / 162	18971	+/-47	+/-47	+/-2	+/-2
19000 / 185	18958	+/-47	+/-47	+/-2	+/-2
19000 / 209	18947	+/-47	+/-47	+/-2	+/-2
19000 / 221	18947	+/-47	+/-47	+/-2	+/-2
19000 / 233	18947	+/-47	+/-47	+/-2	+/-2

Air Data System Test (Continued)

Test Point	Altitude (FT)			Airspeed (KTS)	
	Nominal Altitude	AIR DATA 1	AIR DATA 2	AIR DATA 1	AIR DATA 2
ALT / AS		Tolerance	Tolerance	Tolerance	Tolerance
		Actual	Actual	Actual	Actual
29000 / 111	28999	+/-72	+/-72	+/-2	+/-2
29000 / 130	28982	+/-72	+/-72	+/-2	+/-2
29000 / 150	28967	+/-72	+/-72	+/-2	+/-2
29000 / 169	28953	+/-72	+/-72	+/-2	+/-2
29000 / 178	28946	+/-72	+/-72	+/-2	+/-2
29000 / 188	28937	+/-72	+/-72	+/-2	+/-2
29000 / 196	28928	+/-72	+/-72	+/-2	+/-2
35000 / 97	35016	+/-87	+/-87	+/-2	+/-2
35000 / 114	34996	+/-87	+/-87	+/-2	+/-2
35000 / 130	34978	+/-87	+/-87	+/-2	+/-2
35000 / 147	34961	+/-87	+/-87	+/-2	+/-2
35000 / 156	34953	+/-87	+/-87	+/-2	+/-2
35000 / 164	34946	+/-87	+/-87	+/-2	+/-2
35000 / 171	34939	+/-87	+/-87	+/-2	+/-2

Aircraft S/N: _____	Date: _____	Operator: _____
ADTS Make: _____ Model: _____ S/N: _____ Cal. Date: _____	**ADC1** Model: GDC 74B P/N: 011-01110-____ S/N: _____ Cal. Date: _____	**ADC2** Model: GDC 74B P/N: 011-01110-____ S/N: _____ Cal. Date: _____
Leak Check Static System at 30,000 ft, 300 kts (pass if <300 ft in 1 min) **Pilot: _____ Feet/Min** **Copilot: _____ Feet/Min** **Leak Check Pitot System at 200 kts (pass if <1 KIAS in 1 min)** **Pilot: _____ KIAS/Min** **Copilot: _____ KIAS/Min**		

7.6.2 Static Port Vertical Speed (Rate of Climb) Test

1. Command ADTS to change the altitude at the rates shown in the table below.
2. Wait for ADTS to report that target rates have been achieved.
3. Verify that the Rate of Climb reported by the Vertical Speed field on PFD1 and PFD2 are within the tolerances specified in Table 7-6:

Table 7-6, Vertical Speed Table

Vertical Speed, feet/minute	Allowed tolerance, ±feet/minute
2000	100
1000	50
500	45
200	45
0	N/A (No VS Display)
-200	45
-500	45
-1000	50
-2000	100

7.6.3 OAT Probe Check

1. Ensure on-side sensors for PFD1 and PFD2.
2. Ensure the outside air temperature (OAT) probes and a calibrated thermometer stabilize at ambient temperature.
3. Verify that the OAT measurement shown on PFD1 and PFD2, in degrees Celsius, indicate within 2 °C of the ambient temperature as measured by the calibrated thermometer.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.7 GRS 77 AHRS / GMU 44 Magnetometer

Original GRS 77 is Reinstalled

If the original GRS 77 is reinstalled, then no software loading is required. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process.

If the GRS rack was not removed or loosened, continue to the GRS/GMU Test (Section 7.7.6).

If the GRS rack was removed or loosened, continue to the GRS/GMU Calibration Procedures (Section 7.7.1).

Original GRS 77 is Installed in Opposite Location for Troubleshooting

If the original GRS #1 and GRS #2 are installed in opposite locations (GRS #1 and GRS #2 in opposite unit racks), no software loading is required.

If the GRS rack(s) was not removed or loosened, continue to the GRS/GMU Test (Section 7.7.6).

If the GRS rack(s) was removed or loosened, continue to the GRS/GMU Calibration Procedures (Section 7.7.1).

New, Repaired or Exchange GRS 77 is Installed

If a new, repaired or exchange GRS 77 is installed, then software must be loaded. Continue to Section 3.9 for software loading, then proceed as follows:

If the GRS rack(s) was not removed or loosened, continue to the GRS/GMU Test (Section 7.7.6).

If the GRS rack(s) was removed or loosened, continue to the GRS/GMU Calibration Procedures (Section 7.7.1).

New GRS 77 Configuration Module is Installed

If the GRS 77 configuration module is replaced, no software loading is required. Continue to the GRS/GMU Calibration Procedures (Section 7.7.1).

Original GMU 44 is Reinstalled

If the original GMU 44 is reinstalled, then no software loading is required. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GRS/GMU Test (Section 7.7.6).

Original GMU 44 is Installed in Opposite Location for Troubleshooting

If the original GMU #1 and GMU #2 are installed in opposite locations (GMU #1 and GMU #2 in opposite unit racks), no software loading is required. However, performing the Magnetometer Calibration Procedure is required. Continue to the GRS/GMU Test (Section 7.7.6).

New, Repaired or Exchange GMU 44 is Installed

If a new, repaired or exchange GMU 44 is installed, then software must be loaded. Continue to Section 3.9 for software loading, then continue to the GRS/GMU Calibration Procedures (Section 7.7.1).

7.7.1 GRS/GMU Calibration Procedures

GRS/GMU Recalibration Criteria

The following calibration procedures are provided for the GRS 77 and GMU 44:

- Pitch/Roll Offset: (Procedure A1, PROVIDED IN SECTION 7.7.2)
- Magnetometer Calibration: (Procedure B, PROVIDED IN SECTION 7.7.4)
- Engine Run-Up Vibration Test: (Procedure D, PROVIDED IN SECTION 7.7.5)
- Magnetometer Interference Test: (Procedure E, PROVIDED IN SECTION 5.15.4)

When ready to perform the procedures, shut the PFDs and MFD off by pulling the PFD and MFD circuit breakers. Restart all displays in configuration mode. Follow the steps given for each procedure on-screen at the GRS/GMU CALIBRATION page. Note that the CALIBRATE command cannot be selected and activated until the installer acknowledges all required steps have been carried out by pressing the ENT key on each step.

Table 7-7, Required GRS/GMU Calibrations

Condition	Calibrations Required		
	Procedure A1: GRS 77 Pitch/Roll Offset	**Procedure B: GRS/GMU Magnetic Calibration**	**Procedure D: Engine Run-up Vibration Test**
Either GMU 44 was removed and reinstalled. (no change in serial number)	None Required. Continue to GRS/GMU Test section.		
GMU 44 was replaced with new unit. (New serial number)		X	
GRS 77 AHRS was removed and/or replaced. The mounting tray was NOT removed and the mounting tray bolts were NOT loosened.	None Required. Continue to GRS/GMU Test section.		
GRS 77 AHRS was removed and/or replaced. The mounting tray WAS removed and/or mounting tray bolts WERE loosened.	X	X	X
GRS 77 AHRS Configuration Module was replaced.	X	X	X

7.7.2 Procedure A1: GRS 77 Pitch/Roll Offset Calibration

This procedure must be performed for both GRS 77 units installed in the aircraft. This first procedure must be carried out with the engine off.

1. Level the aircraft to within ±0.25° of zero pitch and zero roll using a digital level. (Follow instructions in King Air 200 Series Maintenance Manual, listed in Table 1-2, for leveling)
2. Start the G1000 system in Configuration mode.
3. Go to the GRS Page Group and select the GRS/GMU Calibration page at the PFD. This page is protected and the following softkey password must be entered at the PFD to continue:
    - 9
    - 10
    - 11
    - 12 (Far Right softkey)

GRS / GMU CALIBRATION
SELECT GRS UNIT
GRS77 #1
SELECT PROCEDURE
PITCH / ROLL OFFSET
COMMUNICATION STATUS
GPS
AIR DATA
MAGNETOMETER
BEFORE CALIBRATION
1 Level the aircraft to within 0.25 deg of zero-pitch and zero-roll.
2 Ready to enter the GRS77 AHRS Ground Pitch / Roll Aircraft Level Compensation Mode.
CALIBRATE
SYSTEM GDU GIA GEA GTX GRS GDC GFC GMA

4. Ensure that the No. 1 GRS 77 is selected in the SELECT GRS UNIT window on the PFD.
5. Activate the cursor and highlight the SELECT PROCEDURE window and select PITCH/ROLL OFFSET.
6. Press the ENT key.
7. Use the cursor to highlight the BEFORE CALIBRATION window.
8. Follow the checklist items displayed on the PFD and press the ENT key as each step is completed or confirmed.
9. When the CALIBRATE field is blinking, press the ENT button to begin the procedure.
10. After several seconds, a new checklist appears in the lower half of the PFD. Press the ENT key as each step is confirmed. When the CONFIRM AIRCRAFT IS LEVEL field is blinking, press the ENT key to continue.

11. The result of the pitch/roll offset compensation is displayed on the PFD. If successful, the AHRS records the required pitch and roll offsets, informs the operator of a successful conclusion and returns to normal operation.
12. Press the ENT key on the PFD to conclude this procedure for GRS 77 #1.
13. Repeat steps 1 through 6 for GRS 77 #2.

NOTE

The Magnetometer Calibration Procedure that follows in Section 7.7.4 (Calibration Procedure B) must be carried out at a site that is determined to be free of magnetic disturbances. If it is unsure whether the site is 'clean', the technician should verify that the site is 'clean' by following the guidance provided in Section 7.7.3. The technician may skip Section 7.7.3 if the site condition is acceptable.

7.7.3 Compass Rose Evaluation of Magnetic Disturbances for Magnetometer Calibration Procedure (Optional)

NOTE

Typically, a compass rose is an acceptable location to perform the magnetometer calibration procedure. However, because not all compass roses are well maintained, even an existing compass rose should be regularly evaluated using the method described here to determine if it is free of magnetic disturbances. If evaluation of an existing compass rose indicates that magnetic disturbances are present, then an alternative location must be found to perform the Magnetometer Calibration Procedure.

A G1000-equipped airplane that has completed the pitch/roll offset compensation procedure (Procedure A-1, Section 7.7.2) can be used to evaluate a candidate site for magnetic disturbances and determine whether it is a suitable location to perform the magnetometer calibration procedure. The magnetometer calibration procedure itself contains the logic to simultaneously survey the location for magnetic cleanliness while it is computing the magnetometer calibration parameters.

In order to evaluate a candidate site, the Magnetometer Calibration Procedure must be performed twice: once turning clockwise around the site, and once turning counter-clockwise. Both times, the procedure should be conducted as described in Section 7.7.4 of this document, with the exception of the direction of turns around the site.

NOTE

Although Section 7.7.4 indicates that the Magnetometer Calibration Procedure should be performed by making a series of clockwise turns around the site, the procedure can also be performed by making counter-clockwise turns for the purpose of evaluating the site for magnetic disturbances.

If the PFD displays the "CALIBRATION SUCCESSFUL / SITE IS CLEAN" message upon completion of the Magnetometer Calibration Procedure in each clockwise and counter-clockwise direction, then the candidate site is sufficiently free of magnetic disturbances and is acceptable for performing the Magnetometer Calibration Procedure. It is important to obtain successful result in both the clockwise and counter-clockwise directions to ensure that the magnetometer sweeps over a large enough area at the candidate site.

If the PFD displays either the "MAG FIELD AT SITE NOT UNIFORM" or "MAG FIELD AT SITE DIFFERS FROM IGRF MODEL" message upon completion of the Magnetometer Calibration Procedure in either of the two directions, then the site contains magnetic disturbances that are too large.

7.7.4 Procedure B: GRS 77/GMU 44 Magnetic Calibration

NOTE

Procedure A-1 (Section 7.7.2) must first be successfully accomplished before performing Procedure B, only for situations where the GRS 77 was replaced with a new unit.
Calibration Procedure B must be carried out on a compass rose in order to guarantee measurements free of environmental magnetic disturbances. Attempting to carry out this maneuver on a typical ramp area may not yield a successful calibration. The accuracy of the AHRS cannot be guaranteed if this calibration is not performed on a magnetically clean compass rose. If the compass rose condition is not known, it is recommended that the technician follow the guidance in Section 7.7.3.

1. Start the aircraft engine following the procedures referenced in the appropriate King Air AFM or AFMS as shown in the General Arrangement drawing, listed in Table 1-2.
2. After aircraft engine startup, taxi the aircraft to a properly calibrated compass rose.
3. At the compass rose, align the aircraft to a heading of magnetic north (±5°).

CAUTION

Calibration Procedure B must be carried out on a compass rose in order to guarantee measurements free of environmental magnetic disturbances. Attempting to carry out this maneuver on a typical ramp area may not yield a successful calibration. The accuracy of the AHRS cannot be guaranteed if this calibration is not performed on a magnetically clean compass rose or equivalent.

NOTE

This procedure provides instructions for calibrating both GRS 77 magnetometers separately. It is acceptable to calibrate both GRS 77 magnetometers simultaneously by putting both PFD 1 and PFD 2 in configuration mode and following the procedure below, using PFD 1 to calibrate GRS #1 and PFD 2 to calibrate GRS #2.

4. Restart the PFD and MFD in configuration mode.
5. Go to the GRS Page Group on the PFD.
6. Select the GRS/GMU Calibration page and enter the following softkey password:
    - 9
    - 10
    - 11
    - 12 (far right softkey)
7. Press the FMS small knob to highlight GRS 77 #1. The FMS small knob can now be turned to select either GRS 77 #1 or GRS 77 #2 for calibration. Press the ENT key after selecting the desired GRS 77 unit to calibrate. The SELECT PROCEDURE field is not blinking.
8. Using the FMS small knob, select MAGNETOMETER. Press the ENT button.
9. Use the cursor to highlight the BEFORE CALIBRATION window.
10. Follow the checklist items displayed on the PFD and press the ENT key as each one is completed or confirmed. When the CALIBRATE field is blinking, press the ENT key to begin the procedure.
11. The PFD display advises the operator when to turn the aircraft, when to stop, and when to turn again.

12. Upon instruction to turn, taxi the aircraft in a right turn. After approximately 25° to 30° of turn from the last heading, the PFD display advises the operator to stop the aircraft.

NOTE

Due to the difficulties in executing smooth, accurate turns the PFD may incorrectly interpret a station and instruct to "HOLD POSITION" prior to full completion of a 30° turn. If this scenario is encountered, it is best for the operator to ignore the "HOLD POSITION" command and instead use outside references to complete the approximate 30° turn. Instead of using the PFD instruction to turn as a real-time indication of when to turn, simply judge the 30° (±5°) turn increments of the aircraft by using the compass rose radials. Dwelling at these 30° increments for the time recommended by the PFD should result in successful calibration.

13. The PFD guides the operator to dwell at multiple headings around a complete circle.

NOTE

Due to high winds or excessive airframe vibration, the operator may encounter a condition where the PFD restarts the 18-second countdown without full completion of the previous countdown. If this is encountered more than once for a given station, the operator should begin turning to the next station (approximately 30°). A minimum of 2 successful stations per quadrant is required, where a successful station is a full 18-second countdown followed by instruction to move. Ensure that at least 2 stations per quadrant are completed. Thus, it may sometimes be required to dwell at a station after a countdown restart. A maximum of 30 stations is allowed for the entire calibration procedure. If too many countdown restarts are encountered, the calibration will fail with the message, "TOO MANY STATIONS."

14. Repeat the turn-and-stop process until the PFD advises that a successful calibration is complete. The GRS 77 AHRS then enters its normal operational mode. Press the ENT button on the PFD to conclude this procedure.
15. Repeat steps 4 through 14 for GRS 77 #2.

7.7.5 Procedure D: Engine Run-Up Vibration Procedure

NOTE

Calibration Procedure D is performed in order to guarantee that the AHRS mounting is sufficiently rigid and insensitive to vibration. This procedure must be performed for both GRS 77 units installed in the aircraft. Calibration Procedures A1 and B (Sections 7.7.2 and 7.7.4 respectively) are not required prior to this procedure.

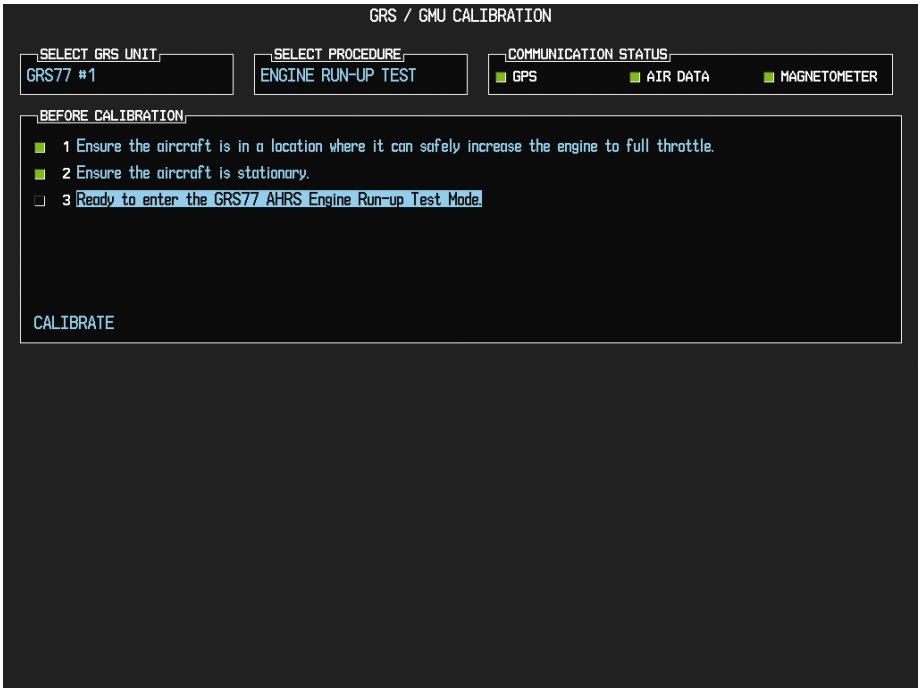

GRS / GMU CALIBRATION
SELECT GRS UNIT
GRS77 #1
SELECT PROCEDURE
ENGINE RUN-UP TEST
COMMUNICATION STATUS
GPS
AIR DATA
MAGNETOMETER
BEFORE CALIBRATION
1 Ensure the aircraft is in a location where it can safely increase the engine to full throttle.
2 Ensure the aircraft is stationary.
3 Ready to enter the GRS77 AHRS Engine Run-up Test Mode.
CALIBRATE

Figure 7-6, Engine Run-Up Test Page

1. Press the FMS small knob to highlight GRS 77 #1. The FMS small knob can now be turned to select either GRS 77 #1 or GRS 77 #2 for calibration. Press the ENT key after selecting the desired GRS 77 unit to calibrate. The SELECT PROCEDURE field is not blinking.
2. Initiate the AHRS engine run-up vibration test procedure by performing the following steps:
   a) Select the ENGINE RUN-UP TEST procedure and press the ENT key.
   b) Follow the checklist items displayed on the PFD, and press the ENT key as each one is completed or confirmed. When the CALIBRATE field is blinking, press the ENT key to begin the procedure.
3. The PFD display instructs the operator to gradually increase power from idle to full throttle and back to idle over a period of 2-4 minutes.
4. When the operator has completed the engine run-up and the engine is back to an idle setting, press the ENT key to indicate that the process is complete. When this is done, the TEST COMPLETE field stops blinking.
5. The PFD informs the operator if the installation has passed or failed the vibration test. If the test fails, the specific measurements causing the failure are identified and associated numeric values are displayed on the PFD.

NOTE

Should a failure occur, the technician may perform the Engine Run-up test up to 3 times successively before corrective action must be taken. If the test does not pass after three attempts, then the installation should not be considered reliable until the source of the vibration problem is identified and remedied. In the event of repeated failure of the engine run-up test, record the values that are reported to be out of range for future reference.

The following are potential causes for failure of the engine run-up test:

a) Vibration motion of GRS77 and/or GMU44 caused by neighboring equipment and/or supports.

b) Mounting screws and other hardware for GRS77 and/or GMU44 not firmly attached.

c) GRS77 connector not firmly attached to unit.

d) Cabling leading to GRS77 or GMU44 not firmly secured to supporting structure.

e) An engine / propeller that is significantly out of balance.

6. Press the ENT key on the PFD to conclude this procedure

7. Repeats steps 1 through 6 for GRS 77 #2 and proceed to Section 7.7.6.

7.7.6 GRS/GMU Test

The aircraft can now be taxied back and the engine can be shut down for final testing. Restart the displays in normal mode to conduct final system checks. When the PFDs power up in normal mode, the AHRS attitude and heading information displayed should become valid within 1 minute of power-up, as shown in Figure 7-7 (provided both GPS receivers have a valid position; if GPS is unavailable, AHRS initialization may take as long as 2 minutes).

Figure 7-7, Normal Mode AHRS Check

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.8 GDL 69A XM Data Link

Original GDL 69A is Reinstalled

No software or configuration loading is required if the removed GDL 69A is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GDL 69A Test (Section 7.8.1).

New, Repaired or Exchange GDL 69A is Installed

If a new, repaired or exchange GDL 69A is installed, the correct software and configuration files must be loaded to the unit, then the XM Satellite Radio subscription must be reactivated. See Section 3.9 and the XM Activation Instructions listed in Table 1-2. Then continue to the GDL 69A Test (Section 7.8.1).

7.8.1 GDL 69A Test

If an XM Satellite Radio subscription has already been activated for the GDL 69A, then power up the G1000 and go to the AUX – XM INFORMATION page and verify that the GDL 69A is working properly. Refer to the Cockpit Reference Guide, listed in Table 1-2, for details on XM Radio weather and music operation.

If the GDL 69A is replaced (new unit), the owner must re-activate the subscription, using the new GDL 69A's Radio ID number(s). Refer to the GDL 69A/69A XM Satellite Radio Activation Instructions, listed in Table 1-3, for details on the activation process.

As a final operations check, make sure there are no MANIFEST errors shown on the PFD for the GDL 69A.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.9 GSA 80 Servos

Original Servo(s) Reinstalled

No software loading is required if the removed servo(s) is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the return-to-service checks in Section 8.

New, Repaired or Exchange Servo(s) Installed

If a new, repaired or exchange servo is installed, the correct software files and certification gains must be loaded to the unit. See Section 3.9 and then continue to the return-to-service checks in Section 8.

NOTE

Refer to the appropriate servo installation drawing listed in Table 1-2.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.10 GCU 477 FMS Controller

Original GCU 477 Reinstalled

No software or configuration loading is required if the removed GCU 477 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GCU 477 Test (Section 7.10.1).

New, Repaired or Exchange GCU 477 Installed

If a new, repaired or exchange GCU 477 is installed, the correct software and configuration files must be loaded to the unit. See Section 3.9 and then continue to the GCU 477 Test (Section 7.10.1).

7.10.1 GCU 477 Test

Perform the following key and knob presses and knob rotations on the GCU 477, and verify the actions on the MFD.

1. Rotate the large FMS knob and verify that the page groups change.
2. Rotate the small FMS knob and verify that the pages change within the page groups.
3. Use the large FMS knob to display the MAP page group and the small FMS knob to display the NAVIGATION MAP page.
4. Rotate the RANGE knob to the right and verify the map display zooms out.
5. Rotate the RANGE knob to the left and verify the map display zooms in.
6. Press the RANGE knob to get the pointer on the map display.
7. Move the RANGE knob to the left and verify the pointer moves to the left.
8. Move the pointer up, right and down and verify that the pointer moves accordingly.
9. Press the RANGE knob to stop displaying the pointer.
10. Press the left and right arrowheads of the SOFTKEY SELECT keys. Verify softkeys highlighting on the MFD changes.
11. Press the SEL key to select one of the softkeys.
12. Press the D→ key to display the DIRECT TO page.
13. Use the keypad to type KIXD and verify KIXD is displayed on the MFD.
14. Press the SPC key to add a space and then the BACK key to delete the space.
15. Press the CLR key to clear the field.
16. Type K34 and then press the ENTER key twice. Verify that the flight path to K34 is displayed on the map.
17. Press the FPL key to open the ACTIVE FLIGHT PLAN page. Press the FPL key again to close it.
18. Press the PROC key to open the PROCEDURES page. Press the PROC key again to close it.
19. Press the MENU key to open the MENU page. Press the MENU key again to close it.
20. Press the COMM keyuntil 1 is lit. Verify the tuning box is present around the COMM 1 frequency on PFD1.
21. Using GCU477 keypad, enter in a frequency of 123.450. Verify COMM1 frequency changes as entered.
22. Press the COMM keyuntil 2 is lit. Verify the tuning box is present around the COMM 2 frequency on PFD1.

23. Using GCU477 keypad, enter in a frequency of 123.450. Verify COMM2 frequency changes as entered.
24. Press the NAV key until 1 is lit. Verify the tuning box is present around the NAV 1 frequency on PFD1.
25. Using GCU477 keypad, enter in a frequency of 108.00. Verify NAV1 frequency changes as entered.
26. Press the NAV key until 2 is lit. Verify the tuning box is present around the NAV 2 frequency on PFD1.
27. Using GCU477 keypad, enter in a frequency of 108.00. Verify NAV1 frequency changes as entered.
28. Press the XPDR key until the light to the left of the button is lit. Verify a flashing box appears in the XPDR 1 code window.
29. Using GCU477 keypad, enter in a code of 1234. Verify XPDR1 shows a code of 1234 in the window.
30. Press the XPDR key until the light to the right of the button is lit. Verify a flashing box appears in the XPDR 2 code window.
31. Using GCU477 keypad, enter in a code of 1234. Verify XPDR2 shows a code of 1234 in the window.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.11 GMC 710 AFCS Controller

Original GMC 710 Reinstalled

No software or configuration loading is required if the removed GMC 710 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GMC 710 Test (Section 7.11.1).

New, Repaired or Exchange GMC 710 Installed

If a new, repaired or exchange GMC 710 is installed, the correct software and configuration files must be loaded to the unit. See Section 3.9 and then continue to the GMC 710 Test (Section 7.11.1).

7.11.1 GMC 710 Test

Perform a basic operational check on the GMC 710. The following knob, wheel and key presses and rotations are to be performed on the GMC 710.

1. Ensure the G1000 is operating in normal mode and the autopilot is operational.
2. Press the FD key a few times; verify the Flight Director display on PFD1 toggles on and off. Leave the flight director displayed.
3. Press the XFR key and verify the white-illuminated arrowhead points in the opposite direction. Verify the green arrow displayed at the top of PFD 1 also points in the same direction.
4. Rotate the ALT SEL knob and verify the altitude bug, displayed on PFD 1 altitude tape, moves.
5. Rotate the UP/DN wheel and verify the flight director moves in the vertical direction.
6. Press the HDG key and verify the white illumination appears next to the key. Rotate the HDG knob and verify the heading bug, displayed on PFD 1 compass card, moves and the flight director follows.
7. Press the HDG knob and verify the heading bug centers.
8. Press the YD key and verify the white illumination appears next to the key.
9. Press the VS key and verify the white illumination appears next to the key.
10. Press the FLC key and verify the white illumination appears next to the key.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.12 GWX 68 Weather Radar

Original GWX 68 Reinstalled

No software or configuration loading is required if the removed GWX 68 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GWX 68 Test (Section 7.12.1).

New, Repaired or Exchange GWX 68 Installed

If a new, repaired or exchange GWX 68 is installed, the correct software and configuration files must be loaded to the unit. See Section 3.9 and then continue to the GWX 68 Test (Section 7.12.1).

7.12.1 GWX 68 Test

Operation of the GWX 68 Weather Radar is accomplished using the MFD/GCU 477. Refer to G1000 200/B200 King Air Cockpit Reference Guide, listed in Table 1-2, for basic operation.

NOTE

Before energizing the equipment, be sure microwave radiation safety precautions including both fuel and personnel safety considerations have been observed. These include clearing all personnel to an area beyond the maximum permissible exposure level (MPEL) boundary. The MPEL for the GWX 68 is 11 feet.

1. On the GCU, turn the large FMS knob to select the Map Page Group then turn the small FMS knob to select the Weather Radar page.
2. Select the MODE softkey.
3. Select the STANDBY softkey to initiate the one minute warm-up period. Verify the radar enters the standby mode after the warm-up is complete.
4. Select the MODE softkey.
5. Select the WEATHER softkey. After reading the CAUTION statement, turn the large FMS knob to select YES. Press the GCU ENT key.
6. Select the STAB ON softkey to activate antenna stabilization or select the STAB OFF softkey to deactivate. Verify the current stabilization condition is shown in the upper right of the weather radar display.
7. Select the BACK softkey.
8. Select the VERTICAL softkey.
9. Select the TILT softkey to activate the cursor in the TILT field.
10. On the GCU, turn the small FMS knob to select the desired antenna tilt angle. Press the GCU ENT key. Press the GCU FMS knob to remove the cursor.
11. Select the GAIN softkey to activate the cursor in the GAIN field.
12. On the GCU, turn the small FMS knob to adjust the gain for the desirable level. Verify the gain setting is visible in the gain field as a movable horizontal bar in a flashing box and the line pointer is a reference depicting the calibrated position. Press the FMS knob to remove the cursor.
13. On the GCU, select the GAIN softkey again to recalibrate the gain. Verify 'CALIBRATED' is displayed in the GAIN field.
14. Select the MODE softkey.
15. Select the OFF softkey.

7.13 Non-Garmin Traffic System Functional Check

1. Select the TRAFFIC MAP page on the MFD.
2. Verify that the STANDBY, OPERATE, TEST and ALT MODE soft keys are available on the bottom of the MFD. Verify that an operating mode; STANDBY, OPERATE, or TEST (not TAS FAIL) is displayed in the upper left corner of the traffic map. Verify that NO DATA is not displayed in yellow in the center of the display over the aircraft symbol.

NOTE

If the **ALT MODE** softkey is not displayed, the G1000 has not been properly configured for the traffic system. Reference Section 3.15, "Traffic System Option" to enable the traffic system.

3. Press the OPERATE soft key and verify that OPERATING is displayed in the upper left corner of the traffic map.
4. Press the STANDBY soft key and verify that STANDBY is displayed in the upper left corner of the traffic map.
5. Press the TEST soft key and verify that TEST is displayed in the upper left corner of the traffic map and a traffic test pattern is displayed. Upon completion of the test, verify that "TAS SYSTEM TEST OK" is heard over the cockpit speaker.

NOTE

This annunciated traffic system test message may be different from the traffic system installed on subject aircraft.

6. Open the TRFC circuit breaker on the avionics circuit breaker panel. On the MFD, verify that NO DATA is displayed in yellow after several seconds.
7. Close the TRFC circuit breaker on the avionics circuit breaker panel and verify that NO DATA is removed after several seconds.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.14 Stormscope Functional Check

Reference Section 3.17, Stormscope (WX-500) Configuration, for configuring Stormscope. This procedure assumes familiarity with the set-up and operation of the WX-PA portable analyzer kit.

1. Apply power to the WX-500 and verify that no failed test messages appear. If fault messages do appear, refer to the WX-500 Installation Manual for troubleshooting.
2. Following successful power up, verify the following modes:
   - Access to both 3600 and 1200 weather view modes.
   - All available ranges can be displayed.
   - Access to the cell mode and strike mode.
   - Strike counter is displayed in all weather modes and ranges.
3. Key COM1 and COM2 several times on different frequencies representing the lower, mid and upper portion of the VHF COM frequency band. Verify keying of COM1 or COM2 does not cause strike data to appear on the MFD.
4. Operate DME, XPDR 1, XPDR 2 and weather radar. Verify these systems do not cause strike data to appear on the MFD.
5. Connect the WX-PA cable to the WX-PA antenna.
6. Position the WX-PA antenna on the WX-500 antenna. Ensure the connection is tight. If necessary, use tape to secure the WX-PA antenna. Ensure the "FORWARD" arrows are aligned and the WX-PA antenna suction cups are positioned forward of center along the longitudinal axis.
7. Secure the WX-PA cable to the aircraft with the attached suction cup and route the cable to the cockpit.
8. Connect the remaining cable end to the WX-PA.
9. Power up the WX-PA and verify the WX-500 is in the weather mapping mode (i.e. 3600 weather view at the 200 NM range.
10. Set the WX-500 to STRIKE mode; 100 NM range (or next highest available range).
11. Select the Continuous Out mode displayed on the WX-PA menu and press MENU/ENTER.
12. Select the bottom mount antenna configuration on the WX-PA keyboard ("A" key).
13. Select a cardinal bearing and a range of 120 NM.
14. Use the F1 and F2 keys to adjust range and F3 and F4 keys to adjust heading.

NOTE

The WX-500 will plot data at one-half the range selected on the WX-PA.

15. Press MENU/ENTER to start the test.
16. Observe the MFD to ensure the proper positioning of the strikes, based on range and azimuth settings on the WX-PA. Change the cardinal bearings and verify correct test strikes. Verify the strikes are within 10 degrees of the selected azimuth and plot at 60NM (1/2 120 NM).
17. Verify after 20 seconds of operation the strike counter reads 580 +/-40.
18. After testing for all ranges and bearings indicated, press 2ND then MENU/ENTER to return to the main menu.
19. Select Circular Pattern mode on the WX-PA mode menu and press MENU/ENTER.
20. Select bottom mount antenna configuration on the WX-PA keyboard ("A" key).

NOTE

The MFD should be set at 100 NM (or next highest available range) on the 360 degree weather screen and in strike mode.

21. Use the F1 and F2 keys to select 120 NM range and press MENU/ENTER to start the test. Verify the WX-500 plots discharge points at approximately 60 NM.
22. Observe the MFD to ensure the proper positioning of the test strikes. Verify the strikes are within 10 degrees of the 30 degree azimuth increment and within 12 NM of 60 NM,
23. When complete, set WX-PA for 55 NM, set the MFD for 50 NM (or the next highest available range) and repeat test.
24. On the MFD, verify the sensor plots points just outside of 25 NM and the strikes are within 10 degrees of the 30 degree azimuth and within 5 NM of 27.5 NM.
25. Repeat above setting the MFD for 25 NM (or the next highest available range) and the WX-PA for 15 NM.
26. On the MFD, verify the positioning of test strikes are within 10 degrees of azimuth and within 2 NM of 7.5 NM.
27. Restart the G1000 in configuration mode by opening the PFD and MFD circuit breakers. While holding the ENT keys on the PFDs and MFD, restore power by closing the PFDs and MFD circuit breakers.
28. Select the OTHER page group on the MFD. The STORMSCOPE page is shown by default.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.15 TAWS Functional Check

7.15.1 Functional Check for TAWS-B

1. With the G1000 in Normal Mode, use the GCU FMS knob to select the MAP group and TAWS page on the MFD.
2. Verify that the title at the top of the page reads "MAP – TAWS-B".

NOTE

If TAWS has not been enabled, the title will read "MAP – TERRAIN PROXIMITY" or "MAP – TERRAIN". Refer to section 3.30 for TAWS Configuration for configuring TAWS.

3. Press the GCU MENU button and select "Test TAWS System" from the pop-up menu. Verify TAWS test annunciation is displayed on the MFD and both PFDs.
4. After the TAWS test has completed, verify that "TAWS System Test Okay" is heard over the cockpit speaker (if selected) and the headsets.
5. Press the GCU MENU button again and select "Inhibit TAWS" from the pop-up menu and press ENT on the GCU. Verify "TAWS INH" is displayed on PFD 1 and PFD 2.
6. Press the GCU MENU button again and select "Enable TAWS" from the pop-up menu and press ENT on the GCU. Verify the "TAWS INH" annunciation on the PFDs has extinguished.
7. With a GPS position acquired, shield or disconnect the GPS antennas to remove the GPS signal. Verify "LOI" shows on the MFD and the "TAWS N/A" and "LOI" annunciations show on the PFDs.
8. Reconnect or remove the shield from the GPS antennas, and verify the MFD "LOI" indication and PFD "TAWS N/A" and "LOI" annunciations are removed once the GPS satellites are acquired.
9. Pull PFD1 PRI and PFD1 SEC circuit breakers. Re-power PFD1 in configuration mode, and use the PFD1 FMS knob to select the Audio Alert Configuration page.
10. Ensure cockpit speaker is selected ON. Use the PFD1 FMS knob to highlight each of the following messages then select PLAY. Verify each of the following audio messages are played:
    - Too Low Terrain
    - Sink Rate
    - Pull Up
    - Don't Sink
    - Five Hundred
    - Caution, Terrain (2X)
    - Terrain (2X), Pull Up (2X)
    - Caution, Obstacle (2X)
    - Obstacle (2X), Pull Up (2X)
    - Terrain Ahead (2X)
    - Terrain Ahead, Pull Up (2X)
    - Obstacle Ahead (2X)
    - Obstacle Ahead, Pull Up (2X)
11. Pull the PFD1 PRI and PFD1 SEC circuit breakers, and re-power PFD1 in normal operating mode.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.15.2 Functional Check for TAWS-A

1. With the G1000 in Normal Mode, use the GCU FMS knob to select the MAP group and TAWS page on the MFD.
2. Verify that the title at the top of the page reads “MAP – TAWS-A”.

NOTE

If TAWS has not been enabled, the title will read “MAP – TERRAIN PROXIMITY” or “MAP – TERRAIN”. Refer to section 3.30 for TAWS Configuration for configuring TAWS.

3. Press the GCU MENU button and select “Test TAWS System” from the pop-up menu. Verify TAWS test annunciation is displayed on the MFD and both PFDs.
4. After the TAWS test has completed, verify that “TAWS System Test Okay” is heard over the cockpit speaker (if selected) and the headsets.
5. Press the GCU MENU button again and select “Inhibit TAWS” from the pop-up menu and press ENT on the GCU. Verify “TAWS INH” is displayed on PFD 1 and PFD 2.
6. Press the GCU MENU button again and select “Enable TAWS” from the pop-up menu and press ENT on the GCU. Verify the “TAWS INH” annunciation on the PFDs has extinguished.
7. Press the GCU MENU button again and select “Inhibit GPWS” from the pop-up menu and press ENT on the GCU. Verify “GPWS INH” is displayed on PFD 1 and PFD 2.
8. Press the GCU MENU button again and select “Enable GPWS” from the pop-up menu and press ENT on the GCU. Verify the “GPWS INH” annunciation on the PFDs has extinguished.
9. Press the GCU MENU button again and select “Flap Override” from the pop-up menu and press ENT on the GCU. Verify “FLAP OVR” is displayed on PFD 1 and PFD 2.
10. Press the GCU MENU button again and select “Disable Flap Override” from the pop-up menu and press ENT on the GCU. Verify the “FLAP OVR” annunciation on the PFDs has extinguished.
11. With a GPS position acquired, shield or disconnect the GPS antennas to remove the GPS signal. Verify “LOI” shows on the MFD and the “TAWS N/A” and “LOI” annunciations show on the PFDs.
12. Reconnect or remove the shield from the GPS antennas and verify the MFD “LOI” indication and PFD “TAWS N/A” and “LOI” annunciations are removed once the GPS satellites are acquired.
13. Pull the RADIO ALTM circuit breaker. Verify “GPWS FAIL” is displayed on PFD1 and PFD2.
14. Reset the RADIO ALTM circuit breaker. Verify “GPWS FAIL” annunciations are removed.
15. Pull PFD1 PRI and PFD1 SEC circuit breakers. Re-power PFD1 in configuration mode, and use the PFD1 FMS knob to select the Audio Alert Configuration page.

16. Ensure cockpit speaker is selected ON. Use the PFD1 FMS knob to highlight each of the following messages then select PLAY. Verify each of the following audio messages are played:

    - Too Low, Terrain
    - Too Low, Flaps
    - Too Low, Gear
    - Sink Rate
    - Pull Up
    - Don't Sink
    - Caution, Terrain (2X)
    - Terrain (2X), Pull Up (2X)
    - Terrain (2X)
    - Caution, Obstacle (2X)
    - Obstacle (2X), Pull Up (2X)
    - Terrain Ahead (2X)
    - Terrain Ahead, Pull Up (2X)
    - Obstacle Ahead (2X)
    - Obstacle Ahead, Pull Up (2X)
    - Five Hundred
    - Four Hundred
    - Three Hundred
    - Two Hundred
    - One Hundred
    - Glide Slope
    - Glide Path

17. Pull the PFD1 PRI and PFD1 SEC circuit breakers, and re-power PFD1 in normal operating mode.

NOTE

The following steps require the movement of the flaps and landing gear.
This portion of the check can be accomplished in conjunction with the Landing Gear Aural Alert and XM Audio Suppression Test in Section 7.2.2.

18. Place the airplane on jacks (Ref. King Air 200 Series Maintenance Manual Chapter 7-00-00) with the wheels clear of the ground.
19. Ensure all equipment and personnel are clear of the flaps and landing gear. Place the flaps and landing gear in the full down positions.
20. Using an air data test set connected to the pilot side pitot/static system, set an airspeed of at least 190 kts as displayed on PFD1.
21. After an alert advisory appears, press the softkey directly below the flashing ADVISORY.
22. Verify the "TAWS FLAP FAULT – Flaps detected in the LDG position" and "TAWS GEAR FAULT – Landing Gear detected in the DOWN position" messages are present.
23. Press the ALERTS softkey to close the alerts window.
24. Place the flaps and landing gear in the full up positions.
25. Press the ALERTS softkey again to open the alerts window.
26. Verify the "TAWS FLAP FAULT – Flaps detected in the LDG position" and "TAWS GEAR FAULT – Landing Gear detected in the DOWN position" messages not present.
27. Return air data test set to GROUND.
28. Place the landing gear in the down position and remove the aircraft from the jacks.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.16 FliteCharts Functional Check

Reference Section 3.20, FliteCharts Configuration, for configuring FliteCharts.

NOTE

This test is not required if ChartView is enabled.

1. With the G1000 in Normal Mode, use the GCU FMS knob to select 'AUX – System Status' page, then select MFD1 DB softkey.
2. Use the small FMS knob to scroll to CHART.
3. Verify "FliteCharts" is displayed in blue text adjacent to "CHART".
4. Verify the FliteCharts database cycle number is displayed in blue text and the FliteCharts database is current.
5. Deactivate the cursor and use the GCU large FMS knob to select the Navigation Map Page then press the SHW CHRT softkey.
6. Verify the airport chart is displayed and the following softkeys are displayed (some softkeys may be grayed out):
   - CHRT OPT
   - CHRT
   - INFO-1
   - DP
   - STAR
   - APR
   - WX
   - NOTAM
   - GO BACK
7. Press the CHRT OPT softkey and verify the following softkeys are displayed (some softkeys may be grayed out):
   - ALL
   - HEADER
   - PLAN
   - PROFILE
   - MINIMUMS
   - FIT WDTH
   - FULL SCN
   - BACK

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.17 ChartView Functional Check

ChartView must be enabled using a ChartView Enable Card, as specified in the General Arrangement Drawing listed in Table 1-2, and a current ChartView database. Reference section 3.29, "ChartView Configuration" for enabling procedures.

NOTE

The required ChartView databases are subscription-based and are to be procured by the aircraft owner directly from Jeppesen.

1. With the G1000 in Normal Mode, use the GCU FMS knob to select 'AUX – System Status' page, then select MFD1 DB softkey.
2. Use the small FMS knob to scroll to CHART.
3. Verify "ChartView" is displayed in blue text adjacent to CHART.
4. Verify the ChartView database cycle number is displayed in blue text and the ChartView database is current.
5. Deactivate the cursor and use the large GCU FMS knob to select the Navigation Map Page then press the SHW CHRT softkey.
6. Verify the airport chart is displayed and the following softkeys are displayed(some softkeys may be grayed out):
   - CHRT OPT
   - CHRT
   - INFO-1
   - DP
   - STAR
   - APR
   - WX
   - NOTAM
   - GO BACK
7. Press CHRT OPT softkey and verify the following softkeys are displayed (some softkeys may be grayed out):
   - ALL
   - HEADER
   - PLAN
   - PROFILE
   - MINIMUMS
   - FIT WDTH
   - FULL SCN
   - BACK

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.18 SafeTaxi Functional Check

The maximum map ranges for enhanced detail are configurable by the flight crew. When zoomed in close enough to show the airport detail, the map reveals runways with numbers, taxiways with identifying letters/numbers, and airport landmarks including ramps, buildings, control towers, and other prominent features. Resolution is greater at lower map ranges. When the aircraft location is within the screen boundary, including within SafeTaxi ranges, an airplane symbol is shown on any of the navigation map views for enhanced position awareness.

Any map page that displays the navigation view can also show the SafeTaxi airport layout, within the maximum configured range. The following is a list of pages where the SafeTaxi feature can be seen:

- Navigation Map Page
- Inset map
- Weather Datalink Page
- Airport Information Page
- Intersection Information Page
- NDB Information Page
- VOR Information Page
- User Waypoint Information Page
- Trip Planning Page
- Nearest Pages

1. Use the FMS knob on the GCU to select the AUX – System Status page and select DBASE softkey. Use the small FMS knob to scroll to CHART category and verify “FliteCharts” is displayed in blue text adjacent to “CHART”.
2. Verify the FliteCharts database ‘REGION’, ‘CYCLE’ number, ‘EFFECTIVE’, ‘EXPIRES’, and ‘DISABLES’ dates of the subscription appear in blue text.
3. Use the FMS knob on the GCU to select MAP - Navigation Map page.
4. On the GCU, press MENU. With Map Setup highlighted, press ENT on the GCU. Rotate the small GCU FMS knob to select the Aviation group and press the ENT key on GCU.
5. Turn the GCU large FMS Knob to scroll through the Aviation Group options to ‘SAFETAXI’.
6. Turn the GCU small FMS Knob to display the range of distances.
7. Turn the GCU FMS Knob to select 5000ft as the distance for maximum SafeTaxi display range, and then press the GCU ENT key to complete the selection.
8. Using the GCU range knob, select a range of 5000ft or less. Verify SafeTaxi display represents the current aircraft location and the airport layout.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.19 DME Functional Check

This check verifies that the DME-to-G1000 interface operates correctly.

NOTE

Support for a single Collins DME-42 system is provided as an option in the G1000. If the DME option is selected, the DME channel one audio level must be adjusted by the procedure contained within Collins DME-42 Transceiver Repair Manual 523-0772458, Maintenance Section 523-0772460-006118, to adjust DME channel one audio level. Recommended nominal DME audio output level is 4.46 Vpp + 0.10 Vpp. Procedure must be accomplished by an approved repair station.

1. If DME is not displayed, press the PFD softkeys on PFD1 and PFD2, then press the DME softkey. Verify the DME window is displayed next to the PFD1 and PFD2 HSI.
2. On PFD1 and PFD2, press the BACK softkey then select DME softkeys. Verify the DME TUNING screen is displayed.
3. On PFD1 and PFD2, use the large FMS knob to select the NAV1, NAV2 and HOLD modes in the DME field. Verify that the NAV1, NAV2 and HOLD modes can be selected by turning the small FMS knob.
4. Set NAV1 and NAV2 frequencies to 108.00 and 117.00 respectively.
5. On PFD1 and PFD2, select the DME NAV1 mode. Verify that the DME window display is set to the NAV1 frequency of 108.00.
6. On PFD1 and PFD2, select the DME NAV2 mode by pressing the ENT softkey. Verify that the DME window display is set to the NAV2 frequency of 117.00.
7. On PFD1 and PFD2, select the DME HOLD mode by using the FMS knob. Verify that the last selected NAV frequency of 117.00 remains the same when the NAV2 frequency is changed. Deselect DME HOLD.
8. On the NAV Test Set, set up a DME test and note the nav frequency. Tune NAV 1 to the test set frequency and set PFD1 and PFD2 DME MODE to NAV1. Set NAV 2 to a frequency other than the test set frequency.
9. Verify that the DME distance on PFD1 and PFD2 match the test set.
10. Select, or verify selected, DME and SPKR buttons on GMA1 and GMA2 audio panels to select the DME audio and select speaker to ON. Verify that the DME audio can be heard over the cockpit speakers.
11. On PFD1 and PFD2, set the DME mode to NAV2 and verify that the DME distance is dashed out.
12. Tune NAV 2 to the test set frequency. Set NAV 1 to a frequency other than the test set frequency.
13. Verify that the DME distance on PFD1 and PFD2 match the test set.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.20 ADF Functional Check

This check verifies that the ADF / G1000 interface operates correctly.

1. Press the PFD softkey on PFD1 and PFD2. Toggle the BRG1 and BRG2 softkey until the ADF bearing is shown on PFD1 and PFD2.
2. Verify that the ADF window is not invalid (no red 'X').
3. Using the ADF control head select a known valid local ADF. Verify that the ADF bearing pointer moves towards a bearing and stabilizes.
4. Select ADF and SPKR on GMA1 and GMA2. Using the ADF control head, select, ANT mode. Verify that the audio from the station tuned can be heard on the pilots and copilots headset and cockpit speaker.
5. Increment the ADF volume control from full low to full high. Verify the volume increases and decreases appropriately over pilots and copilots headset and cockpit speaker.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

7.21 Radio Altimeter Check

This check verifies that the G1000 / radio altimeter interface is operates correctly.

NOTE

This check only verifies the data output from the G1000 equipment. Any equipment/wiring added that is not part of the installation data will need separate testing and verification not covered as part of this document.

1. Navigate to the **AUX – SYSTEM STATUS** page on the MFD.
2. Press the **RA TEST** softkey and verify that "**RA TEST**" annunciation is displayed on both PFDs.
3. Verify **50** feet is displayed in the RA display window on both PFDs.
4. Press the **RA TEST** softkey again. Verify the RA readout window displays **2500** feet and decreases to **0** feet on PFD1 and PFD 2.
5. Pull the RADIO ALTM circuit breaker. Verify on PFD 1 and PFD 2 that an **RA FAIL** message is displayed.
6. Reset the RADIO ALTM circuit breaker.

7.22 Weight on Wheels and Low Speed Awareness Band Check

This procedure will verify that the GDU air ground status uses valid Weight on Wheels (WOW) inputs.

1. Ensure aircraft is positioned with weight on wheels.
2. Apply external power to the aircraft. Set BATT and AVIONICS MASTER switches to ON and wait for all aircraft and avionics systems to complete their initialization and begin operating normally.
3. Verify there are no WOW INVALID or WOW FAULT messages. Refer to Section 5.3 to troubleshoot messages.
4. Verify the Low Speed Awareness band (red band) is NOT displayed on the PFD1 and PFD2 airspeed tapes (see Figure 7-8.)

NOTE

This portion of the check can be accomplished in conjunction with the Landing Gear Aural Alert and XM Audio Suppression Test in Section 7.2.2.

5. Place the airplane on jacks (Ref. King Air 200 Series Maintenance Manual Chapter 7-00-00) with the wheels clear of the ground.
6. Verify there are no WOW INVALID or WOW FAULT messages. Refer to Section 5.3 to troubleshoot messages.
7. Verify the Low Speed Awareness band (red band) appears at the low end of the Air Speed Tape on the PFD1 and PFD2 (see Figure 7-8.)
8. Remove airplane from jacks.

If no other service is to be performed, continue to the return-to-service checks in Section 8.

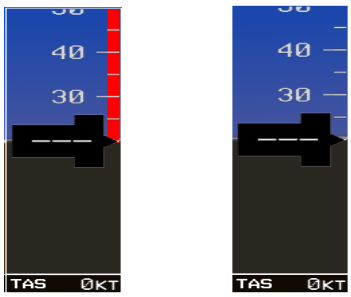


Figure 7-8, Low Speed Awareness Band Symbolization

7.23 RVSM Checks

The following are required initial and continued airworthiness checks to verify proper configuration for operation in RVSM airspace. RVSM operations are prohibited until the all of the RVSM checks are completed successfully.

7.23.1 RVSM Required Avionics Check

With the PFD in configuration mode, select the System Status page using the small FMS knob. Press the small FMS knob to activate the cursor. Highlight each of the following items in the LRU window and verify that the required software part number and version matches the information in the General Arrangement drawing listed in Table 1-2. Verify hardware part number by visual inspection of the units. Record the results in Table 7-8.

ITEM	HARDWARE		OK	SOFTWARE			OK	SYSTEM STATUS REPORT
	DESCRIPTION	PART NUMBER		DESCRIPTION	PART NUMBER	VER		
1	GIA 63W IAU #1			MAIN SUB-SYSTEM				GIA1
				AUDIO				GIA1 AUDIO
				GPS/WAAS ENGINE				GPS1
				CERTIFICATION GAINS				GFC CERT GIA 1
2	GIA 63W IAU #2			MAIN SUB-SYSTEM				GIA2
				AUDIO				GIA2 AUDIO
				GPS/WAAS ENGINE				GPS2
				CERTIFICATION GAINS				GFC CERT GIA 2
3	GDU 1040A PFD			SYSTEM				PFD1
				FPGA				PFD1 FPGA
4	GDU 1040A PFD			SYSTEM				PFD2
				FPGA				PFD2 FPGA
5	GDU 1500 MFD			SYSTEM				MFD1
				FPGA				MFD FPGA
6	GDC 74B AIR DATA COMPUTER			SYSTEM				GDC1
				FPGA				GDC1 FPGA
7	GDC 74B AIR DATA COMPUTER			SYSTEM				GDC2
				FPGA				GDC2 FPGA
8	GTX 33 TRANSPONDER GTX 33D (OPTIONAL)			GTX 33 SYSTEM				GTX1
9	GTX 33 TRANSPONDER GTX 33D (OPTIONAL)			GTX 33 SYSTEM				GTX2

Table 7-8, RVSM Required Avionics

7.23.2 RVSM Critical Region Visual Inspection

The RVSM critical region is a 24 x 24 inch area around the static ports on both sides of the airplane. The corners of the RVSM critical region are to be marked on the aircraft with placards or paint of a contrasting color (see Figure 7-9.) The RVSM critical region must meet the following visual inspection criteria:

1. The fuselage skin must be free from damage. All skin repairs within the RVSM critical region must be flush (no external doublers). If any damage is found, the area must be repaired. Locations of existing protruding head rivets in frames and skin laps are acceptable.
2. The paint (including stripes) must be uniform and smooth. Remove any paint blisters or flaking and sand smooth. Any decals or placards must be flush with no peeling edges.
3. The static ports must be free from any corrosion, elongation of holes, deformation or obstructions. If any damage is found, replace the static port.
4. The oxygen servicing door on the right hand side must close approximately flush with the fuselage skin and be free from damage or deformation. The ELT access hole cover on the right hand side must be in place.

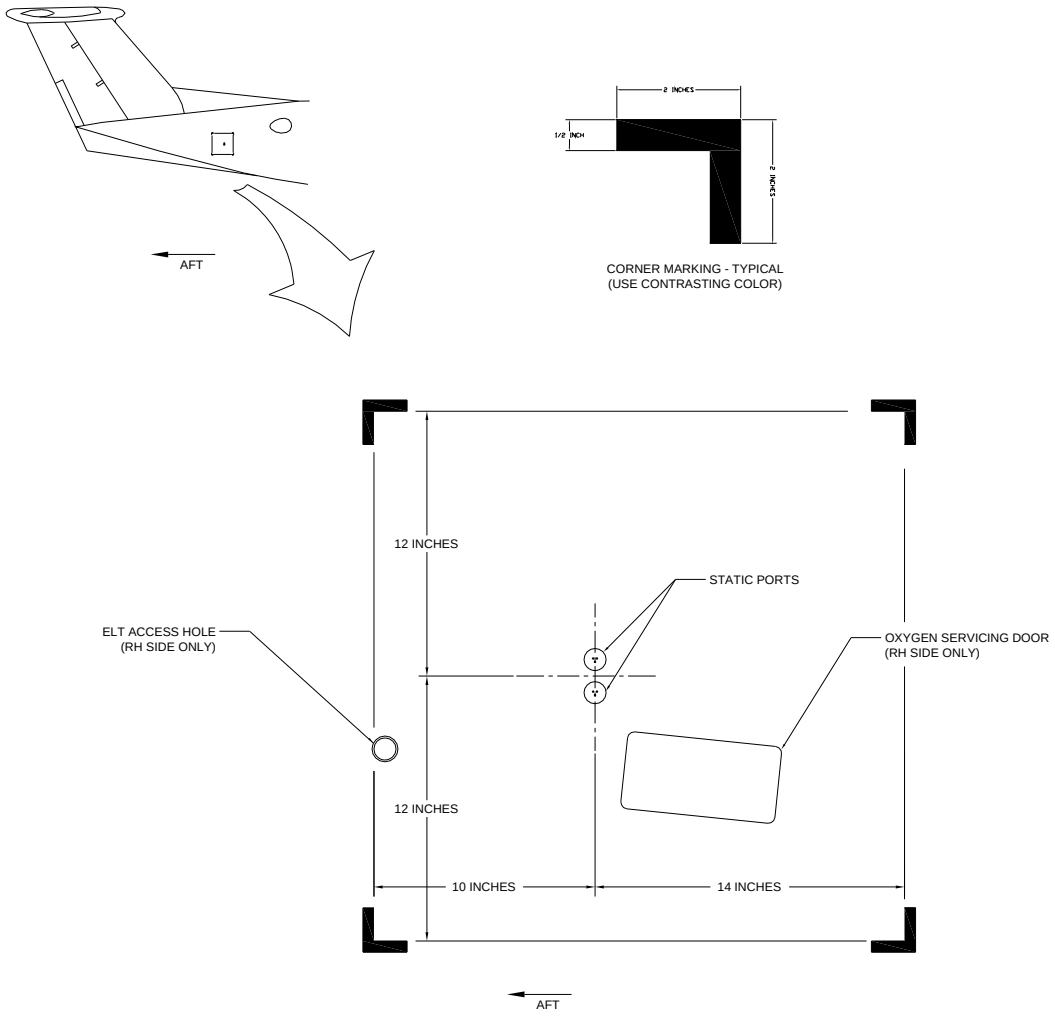


Figure 7-9, RVSM Critical Region

7.23.3 RVSM Static Port Height Inspection

The Gauging Assembly p/n SPF-4 (A1M-BCH-GE) is available from Hawker Beechcraft. Any alternate tool authorized in the King Air 200 Series Maintenance Manual for RVSM static port measurements may be substituted for this tool. Initialize the tool as follows:

1. Make sure the dial indicator reads negative when the plunger is pressed and positive when the plunger is free.
2. Place the gauging assembly on a flat surface (gauge block or equivalent.)
3. Ensure the smaller needle is at approximately (.1).
4. Rotate the dial indicator to set the large needle at (0) as shown in Figure 7-10.

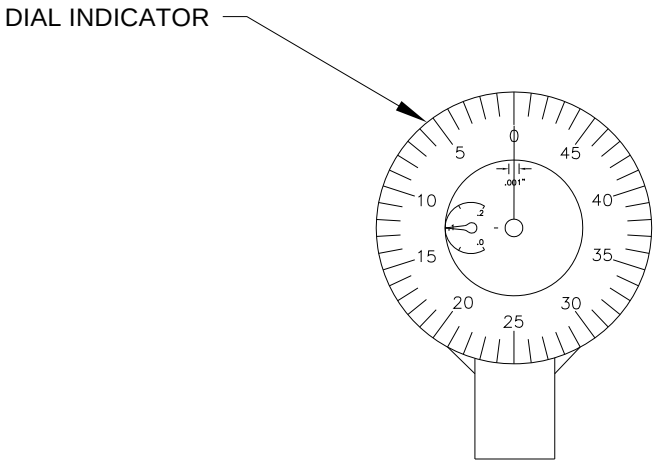


Figure 7-10, Dial Indicator

The static port measurements are obtained at four locations on each static port as shown in Figure 7-12. These measurements are used to find an AVERAGE and ANGLE for each of the four static ports. The AVERAGE is calculated by adding the four measurements and dividing the total by 4. The ANGLE is calculated by subtracting the minimum measurement from the maximum measurement. The calculated AVERAGE and ANGLE for each static port must fall within the ranges shown in Figure 7-13.

Perform the static port measurement as follows:

1. Wipe the surface of static ports clean with isopropyl alcohol.
2. Place the gauging assembly onto the static port surface as shown in Figure 7-11.

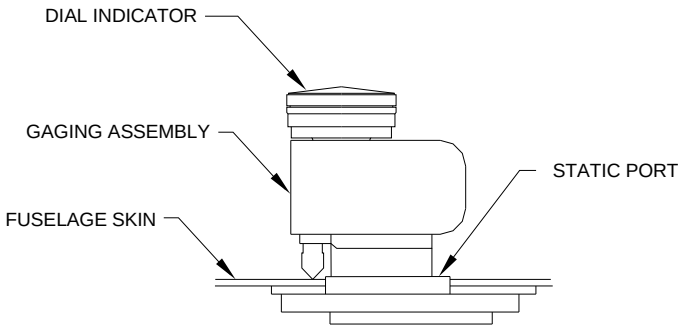


Figure 7-11, Static Port Measurement

NOTE

The dial indicator shows 0.100 inch when completely flush. Therefore subtract the readings from 0.100 inch to determine the actual static port height. This should be completed before making any calculations.

3. For each static port, measure the static port height at the A, B, C and D locations as shown in Figure 7-12. Record the measurements in the measurement log, Figure 7-13.
4. Calculate the AVERAGE for each static port using the measurements by adding the four measurements and dividing the total by 4. Record the AVERAGE in the measurement log, Figure 7-13.
5. Ensure the AVERAGE for each static port is within tolerance (+0.045 to +0.085 inch.) If it is not, remove and reinstall the static ports as necessary to meet the tolerance.
6. Calculate the ANGLE for each static port by subtracting the smallest of the A, B, C or D measurements from the largest of the A, B, C or D measurements. Record the ANGLE in the measurement log, Figure 7-13.
7. Ensure the ANGLE for each static port is within tolerance (0.000 to +0.026 inch.) If it is not, remove and reinstall the static ports as necessary to meet the tolerance.

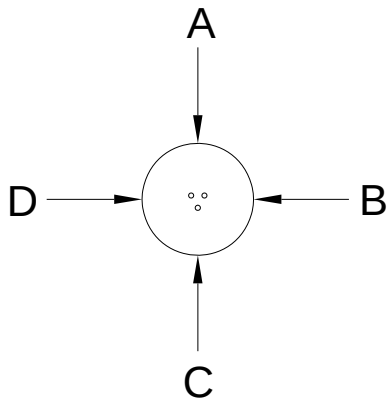


Figure 7-12, Static Port Measurement locations

	A	B	C	D	AVERAGE (A+B+C+D)/4	ANGLE Largest - Smallest
UPPER LEFT						
LOWER LEFT						
UPPER RIGHT						
LOWER RIGHT						
Aircraft s/n:						
Date:						

Figure 7-13, Static Port Measurement Log

7.23.4 RVSM Air Data System Check

Perform the Air Data Test per Section 7.6.1

If either the pilot or copilot air data system does not meet the tolerances specified, have maintenance checks performed on the air data system or the pitot/static system.

IMPORTANT!

RVSM operations are prohibited until the air data system meets all test conditions.

7.23.5 RVSM In-Flight Altitude Hold Check

RVSM operation requires that the autopilot system accurately maintain the acquired altitude during non-turbulent, non-gust cruise conditions. The autopilot must be maintained in accordance with the G1000 System Maintenance Manual listed in Table 1-3. The autopilot must be shown to meet the performance specification of the following in-flight altitude hold test.

1. Verify the following conditions (normal RVSM cruise flight):
   - Altitude FL290 to FL350
   - Altimeter setting 29.92 in Hg (1013 HPA)
   - Autopilot altitude hold engaged
   - Non-turbulent, non-gust conditions
2. Record the data from the primary cockpit displays as specified by Table 7-9 every 5 minutes for a minimum flight segment of 30 minutes in length. The maximum altitude deviation shown on the display throughout the test should not exceed ±65 feet.

If the aircraft fails to hold altitude to this tolerance, repeat the test ensuring that the airspeed remains constant and the air remains stable during the entire test. If the test still fails, have maintenance checks performed on the GFC 700 system, then repeat the test. RVSM operations are prohibited until the autopilot is capable of maintaining altitude within ±65 feet of the selected cruise altitude.

Aircraft s/n:			Date:	
Enroute To:			Pilot:	
Time (hr:min)	Pilot		Copilot	
	Altitude (ft)	Airspeed (kt)	Altitude (ft)	Airspeed (kt)
0:00				
0:05				
0:10				
0:15				
0:20				
0:25				
0:30				
0:35				
0:40				
0:45				
0:50				
0:55				
1:00				

Table 7-9, In-Flight Altitude Hold Performance Test

7.24 Safe Flight Lift Computer Ground Calibration

NOTE

This procedure is required only for aircraft with the optional Electronic Stability and Protection (ESP) feature with Angle of Attack (AoA) modes and the Safe Flight Lift Computer p/n C-05606-1.

Prior to removal of the lift computer, it is recommended that Section 7.24.1 be accomplished to record the existing stall warning points for Pots 0, 1 and 2.

Original C-05606-1 Lift Computer Reinstalled

No ground or flight calibration is required if the removed C-05606-1 Lift Computer is re-installed and the potentiometers are not adjusted. This does not include units that were returned for repair as their calibration will need to be completed at installation.

New, Repaired or Exchange C-05606-1 Lift Computer Installed

If a new, repaired or exchange C-05606-1 Lift Computer is installed, the ground and flight calibration will need to be accomplished. See Section 7.24.2 for the ground calibration and Section 7.24.3 for the flight calibration of the C-05606-1 Lift Computer.

NOTE

Safe Flight P/N C-05606-1 lift computers are equipped with six adjustable potentiometers in the top of the computer. The potentiometers are marked 0, 1, 2, 3, 4, and 5. (Ref. Figure 7-14.)

The potentiometers marked 0, 1, and 2 are used to calibrate the stall warning points for the three flap positions (full up, approach, and full down.)

The potentiometers marked 3, 4, and 5 are used to calibrate the Low Airspeed Awareness (LAA) output for the three flap positions (full up, approach, and full down) which determines Electronic Stability and Protection (ESP) and Autopilot Underspeed Protection (USP) alpha floor symbol position.

7.24.1 Measuring Lift Computer Stall Warning Points

Prior to removal of the lift computer, it is recommended that the stall warning points from the lift computer installed in the aircraft be measured. This section is used to measure stall warning points of the lift computer.

1. Gain access to the stall warning computer.
2. Connect the breakout box (P/N SK100360 or equivalent) between the lift computer and the airplane wiring harness (see Figure 7-15).
3. Make sure that the stall warning heat system is turned OFF.
4. Remove the potentiometer access cover plate from the lift computer.
5. Simulate an in-flight condition as follows: Bypass the landing gear safety switch by connecting an electrical ground to TP 7 of the breakout box. This is best accomplished by placing a jumper between TP 2 and TP 7 of the breakout box.

CAUTION

The anchor tab of the force applicator can be bent if the knob that applies tension to the transducer mounting plate is over tightened. Use care when installing the force applicator to prevent damage to the anchor tab. Refer to the data supplied with the force applicator.

6. Install the 1952-3 gauge (2 to 15 gram scale), in the force applicator (see Figure 7-16) onto the left wing in accordance with the manufacturer's instructions. Refer to the data supplied with the force applicator. The force arm must be positioned so that the applied force is within 1/32 inch of the transducer vane tip. Forces applied forward or up will be classified as minus values. Forces applied aft or down will be classified as plus values. Make sure that the vane is free to move with the force applicator.
7. Apply external power to the aircraft.
8. Place the BATT master switch to the ON position.
9. Verify the STALL WARN circuit breaker on the copilot circuit breaker panel is set.

WARNING:

Make sure that all personnel are clear of the flap area before proceeding with these procedures.

10. Flaps retracted (Pot 0) measurement
    a. Run the flaps to the full UP position.
    b. Install voltmeter leads between TP5 (Hi) and TP2 (Lo), TP6 (Hi) and TP2 (Lo) on the SK100360 Breakout Box. Ensure that 28 VDC is not present. If the flap information is incorrect, troubleshoot in accordance with King Air 200 Series Maintenance Manual procedure 27-31-00.
    c. Using the force applicator, slowly apply a negative Tip Gram (TG) force forward (UP) on the vane until the stall warning horn sounds. Record the flaps retracted (Pot 0) TG value.
    d. Return the force on the vane to 0 TG.
11. Approach Flaps (Pot 1) measurement
    a. Run the flaps to the APPROACH position.
    b. Install voltmeter leads between TP5 (Hi) and TP2 (Lo), TP6 (Hi) and TP2 (Lo) of the SK100360 Breakout Box. Ensure that 28 VDC is ONLY present between TP5 and TP2. If the flap information is incorrect, troubleshoot in accordance with King Air 200 Series Maintenance Manual procedure 27-31-00.
    c. Using the force applicator, slowly apply a negative TG force forward (UP) on vane until the stall warning horn sounds. Record the approach flaps (Pot 1) TG value.
    d. Return the force on the vane to 0 TG.
12. Flaps Extended (Pot 2) measurement
    a. Run the flaps to the FULL DOWN position.
    b. Install voltmeter leads between TP5 (Hi) and TP2 (Lo), TP6 (Hi) and TP2 (Lo) of the SK100360 Breakout Box. Ensure that 28 VDC is ONLY present between TP6 and TP2. If the flap information is incorrect, troubleshoot in accordance with King Air 200 Series Maintenance Manual procedure 27-31-00.
    c. Using the force applicator, slowly apply a negative TG force forward (UP) on the vane until the stall warning horn sounds. Record the flaps extended (Pot 2) TG value.
    d. Return the force on the vane to 0 TG and remove the force applicator from the aircraft.

13. Place the BATT master switch to the OFF position.
14. Remove external power to the aircraft.
15. Remove the breakout box from the aircraft.
16. Reinstall the potentiometer access cover plate on the lift computer.

7.24.2 Calibration of the C-05606-1 Lift Computer

NOTE

For calibration of the stall warning points, reference King Air 200 Series Maintenance Manual, listed in Table 1-2, section 27-31-00. The procedures listed here are provided to augment the King Air 200 Series Maintenance Manual and allow the installer to adjust the stall warning points (Pots 0, 1 and 2) and LAA output (Pots 3, 4 and 5) simultaneously to save setup time.

1. Connect the SK100360 breakout box between the Safe Flight P/N C-05606-1 lift computer and the mating aircraft harness (see Figure 7-15).
2. Make sure the stall warning heater system is turned OFF.
3. Remove the potentiometer access cover plate from the lift computer.
4. Simulate an in-flight condition as follows: Bypass the landing gear safety switch by connecting an electrical ground to TP7 of the breakout box. This is best accomplished by placing a jumper between TP2 and TP7 of the breakout box.

CAUTION

The anchor tab of the force applicator can be bent if the knob that applies tension to the transducer mounting plate is over tightened. Use care when installing the force applicator to prevent damage to the anchor tab. Refer to the data supplied with the force applicator.

5. Install the appropriate gauge, 1952-1 gauge (0.5 to 3 gram scale) or the 1952-3 gauge (2 to 15 gram scale), in the force applicator (see Figure 7-16), onto the left wing in accordance with the manufacturer's instructions. Refer to the data supplied with the force applicator. The force arm must be positioned so that the applied force is within 1/32 inch of the transducer vane tip. Forces applied forward or up will be classified as minus values. Forces applied aft or down will be classified as plus values. Make sure that the vane is free to move with the force applicator.
6. Apply external power to the aircraft.
7. Place the BATT master switch to the ON position.
8. Verify the STALL WARN circuit breaker on the copilot circuit breaker panel is set.

WARNING:

Make sure that all personnel are clear of the flap area before proceeding with these procedures.

9. Flaps retracted calibration:
    a. Run the flaps to the FULL UP position.

b. Using the force applicator, deflect the transducer vane forward (UP) to the (Pot 0) TG force measured in step 10 in Section 7.24.1. If the stall warning horn is already ON, turn (Pot 0) CCW until the horn is OFF and then slowly turn the (Pot 0) CW until the horn is ON again. Press down on the vane until the horn is OFF and slowly release the vane. If the horn is not ON when the vane is released, turn the (Pot 0) until the horn is ON.
c. Reduce the force on the vane to 0 TG and reposition the force applicator to apply a downward force on the vane.
d. Calculate the (Pot 3) TG force by adding +10 TG to the (Pot 0) TG force.

Example:

If the (Pot 0) force is -4 TG, add +10 TG and the (Pot 3) force is +6 TG.

e. Install voltmeter leads between TP18 (Lo) and TP19 (Hi) of the SK100360 Breakout Box.
f. Apply the calculated (Pot 3) TG force to the vane with the force applicator.
g. Adjust the (Pot 3) on the lift computer until the voltage output from TP18 (Lo) and TP19 (Hi) reads 2.2 ± 0.2 VDC on the voltmeter.
h. Return the force on the force applicator to 0 TG.

10. Approach Flaps calibration:

a. Run the flaps to the APPROACH position.
b. Using the force applicator, deflect the transducer vane forward (UP) to the (Pot 1) TG force measured in step 11 in Section 7.24.1. If the stall warning horn is already ON, turn the (Pot 1) CCW until the horn is OFF and then slowly turn the (Pot 1) CW until the horn is ON again. Press down on the vane until the horn is OFF and slowly release the vane. If the horn is not ON when the vane is released, turn the (Pot 1) until the horn is ON.
c. Reduce the force on the vane to 0 TG and reposition the force applicator to apply a downward force on the vane.
d. Calculate the (Pot 4) TG force by adding +14 TG to the (Pot 1) TG force.

Example:

If the (Pot 1) force is -9 TG, add +14 TG and the (Pot 4) force is +5 TG.

e. Install voltmeter leads between TP18 (Lo) and TP19 (Hi) of the SK100360 Breakout Box.
f. Apply the calculated (Pot 4) TG force to the vane with the force gram applicator.
g. Adjust the (Pot 4) on the lift computer until the voltage output from TP18 (Lo) and TP19 (Hi) reads 2.2 ± 0.2 VDC on the voltmeter.
h. Return the force on the force applicator to 0 TG.

11. Flaps Extended calibration:

a. Run the flaps to the FULL DOWN position.
b. Using the force applicator, deflect the transducer vane forward (UP) to the (Pot 2) TG force measured in step 12 in Section 7.24.1. If the stall warning horn is already ON, turn the (Pot 2) CCW until the horn is OFF and then slowly turn the (Pot 2) CW until the horn is ON again. Press down on the vane until the horn is OFF and slowly release the vane. If the horn is not ON when the vane is released, turn the (Pot 2) until the horn is ON.
c. Reduce the force on the vane to 0 TG and reposition the force applicator to apply a downward force on the vane.
d. Calculate the (Pot 5) TG force by adding +17 TG to the (Pot 2) setting.

Example:

If the (Pot 2) force is -10 TG, add +17 TG and the (Pot 5) force is +7 TG.

e. Install voltmeter leads between TP18 (Lo) and TP19 (Hi) of the SK100360 Breakout Box.
f. Apply the calculated (Pot 5) TG force to the vane with the force applicator.
g. Adjust the (Pot 5) on the lift computer until the voltage output from TP18 (Lo) and TP19 (Hi) reads 2.2 ± 0.2 VDC on the voltmeter.
h. Return the force on the force applicator to 0 TG.

12. Place the BATT master switch in the OFF position and remove the external power from the airplane.

13. Remove the force applicator from the left wing.

14. Remove the breakout box and reconnect the lift computer.

15. Install the potentiometer access cover on the lift computer.

16. Close all panels opened to access the lift computer.

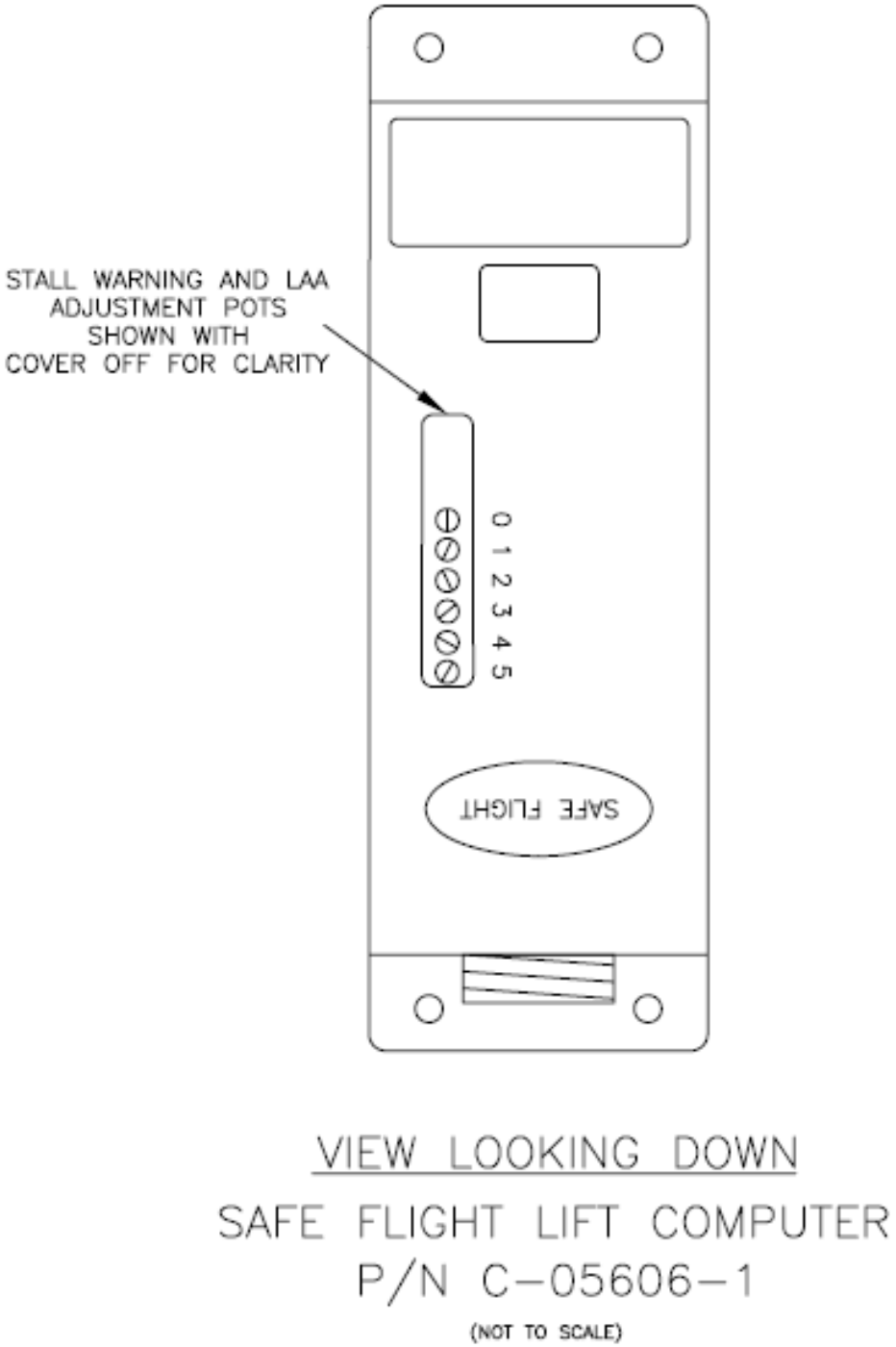


Figure 7-14, C-05606-1 Lift Computer

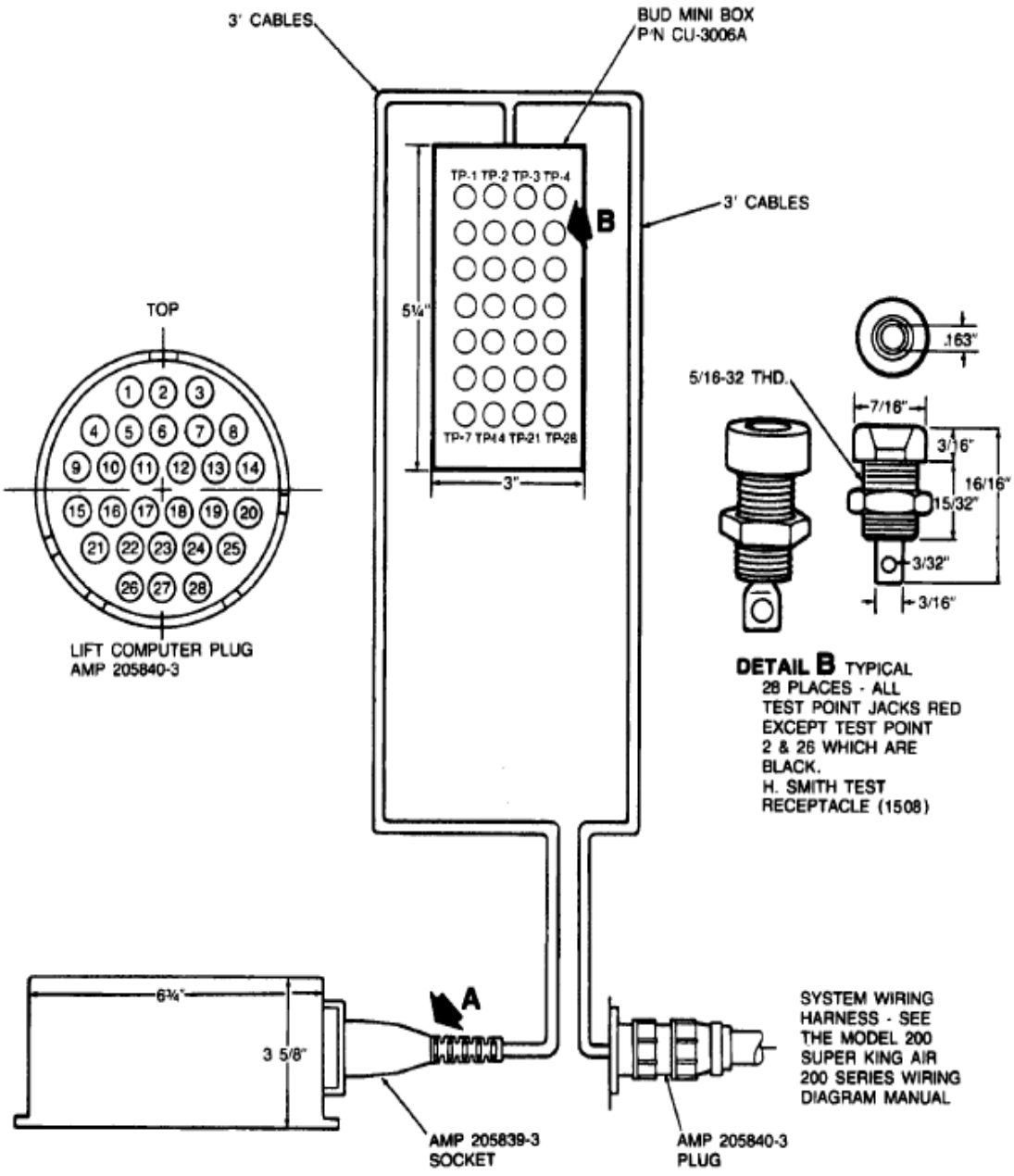
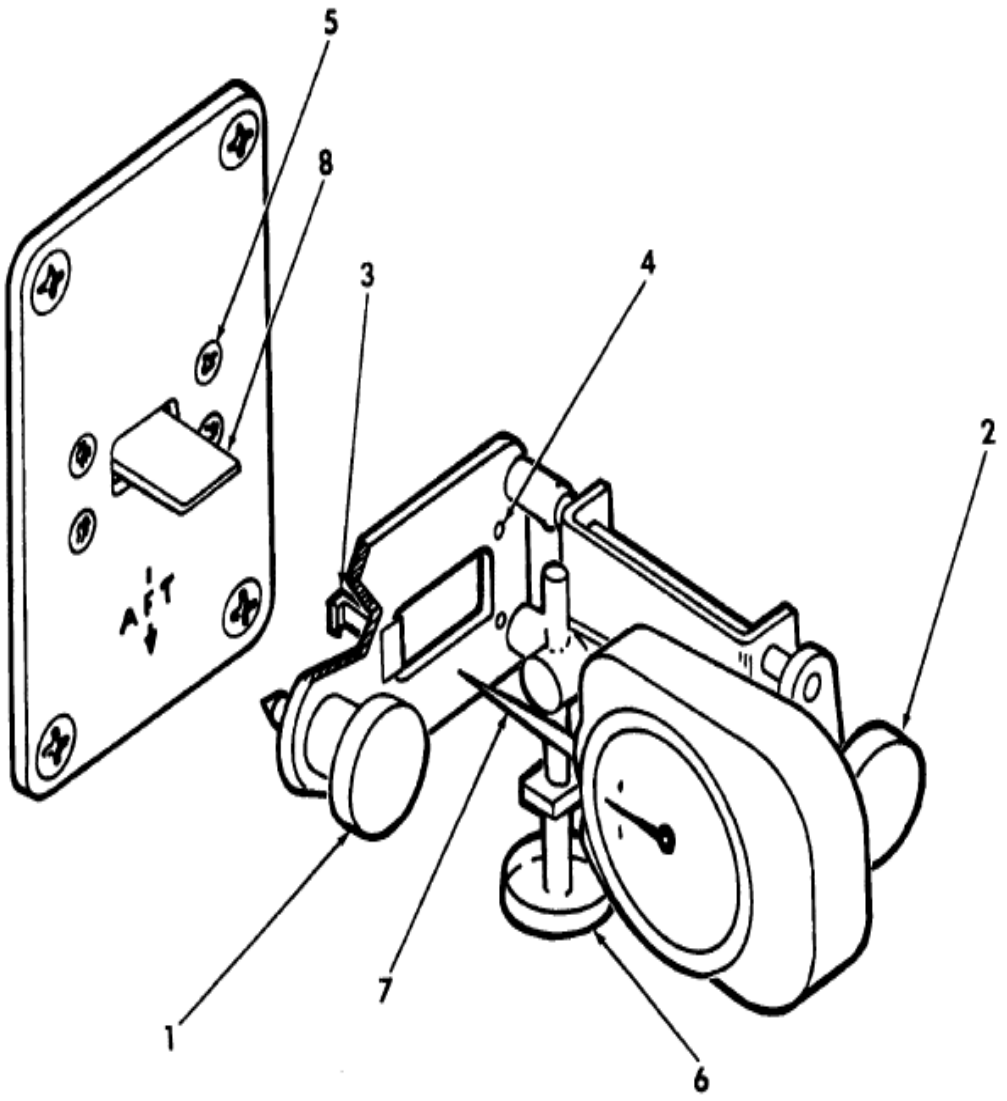


Figure 7-15, Breakout Box



1. Insert positioner anchor tab (3) into vane opening.
2. Hook anchor tab (3) onto the mounting plate.
3. Keeping anchor tab engaged, shift positioner until cone points (4) enter recesses in the screw heads (5).
4. Turn screw (1) counterclockwise until knob clutch slips.
5. Turn screws (2) and (6) as required to bring gage pressure arm (7) to bear on surface of vane (8) within 1/32" of tip.
6. Apply pressure to aft surface of vane (8) for negative (−) tip grams and forward surface for positive (+) tip grams.
7. Turn screw (6) to adjust force (tip grams) as required.

Figure 7-16, Force Applicator Usage Instructions

7.24.3 Safe Flight Lift Computer Flight Calibration

NOTE

This procedure is required only for aircraft with the optional Electronic Stability and Protection (ESP) feature.

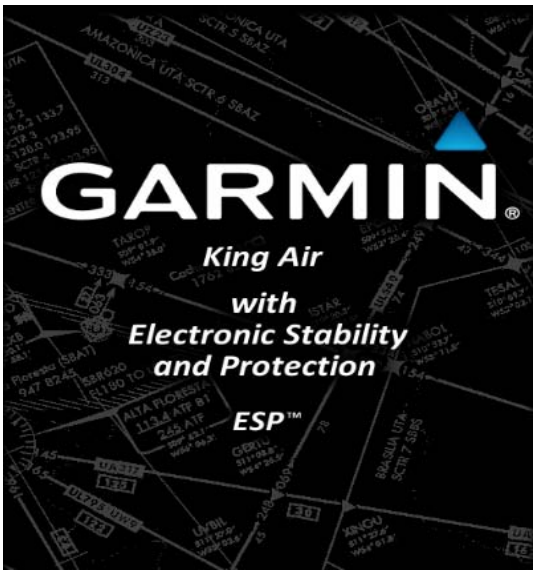
1. Disable the STABILITY & PROTECTION item via the MFD AUX – SYSTEM SETUP 2 page. Verify that the message "ESP OFF" is present.
2. Perform the "Flight Test and Calibration" procedure in accordance with the King Air 200 Series Maintenance Manual, listed in Table 1-2, Section 27-31-00.
3. If the stall warning points for the new lift computer were set to match the lift computer that was removed, adjustments to the new lift computer may not be necessary in flight. If the stall warning points are adjusted in flight, verify the LAA output per Section 7.24.2.
4. Enable the STABILITY & PROTECTION item via the MFD AUX – SYSTEM SETUP 2 page. Verify that the message "ESP OFF" is not present.

7.25 ESP Functional Check

NOTE

This procedure is required only for aircraft with the optional Electronic Stability and Protection (ESP) feature.

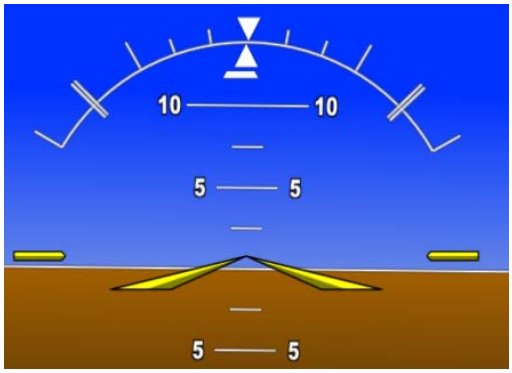
1. Apply power to the aircraft and avionics systems by placing the aircraft AVIONICS MASTER PWR and BATT switches to ON. Ensure G1000 system and components are powered and operating normally.
2. Verify the DISPLAY BACKUP button on the audio panel is pushed in so that the GDUs will not operate in reversionary mode.
3. Verify no AHRS, ADC, Autopilot, PFD, AFCS Mode Controller, GCU alert messages or monitor flags (HDG MISCOMP etc) are present on PFD1 or PFD2.
4. On initial power up verify that the MFD splash screen includes a graphic similar to the following:



5. On the GMC 710 couple the Flight Director to the left side by pressing the XFR button. The arrow that is illuminated indicates which side is coupled. No flight director modes should be active at this time.

6. On the GCU, rotate the inner FMS knob to activate the AUX – SYSTEM SETUP page on the MFD.
7. On the MFD AUX – SYSTEM SETUP page press the SETUP 2 softkey.
8. Verify that on the MFD SETUP 2 page there is a window for Stability & Protection and the status is "ENABLED".

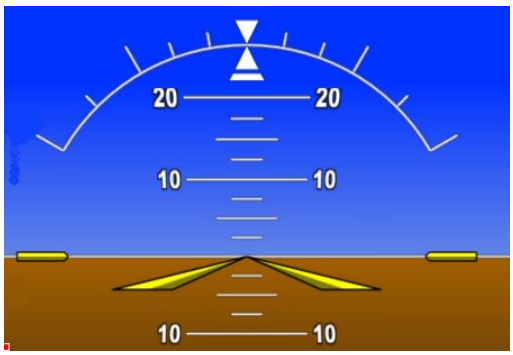
9. Verify on PFD 1 and PFD 2 that there are no "ESP FAIL", "ESP OFF", or "ESP DEGRADE" alert messages.
10. Cover both GPS1 and GPS2 antennas.
11. Verify on PFD 1 and PFD 2 the ESP Roll Indices are displayed at 45° on the roll indicator on the Attitude Display.



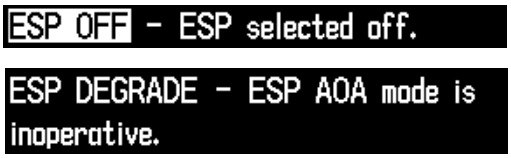
12. For installations with AOA mode, verify on PFD 1 and PFD 2 that there is an "ESP DEGRADE" alert message.

13. On the GCU, press the inner FMS knob to activate the cursor then rotate the outer FMS knob to select the Stability & Protection window on the MFD.
14. Rotate the inner FMS knob to change the status to "DISABLED".
15. Verify that on the MFD SETUP 2 page Stability & Protection window that the status is "DISABLED".

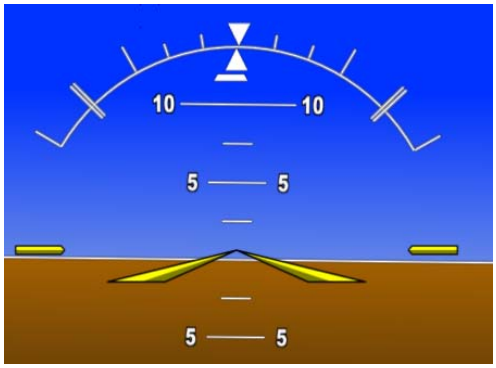
16. Verify on PFD 1 and PFD 2 the ESP Roll Indices are not displayed at 45° on the roll indicator on the Attitude Display.



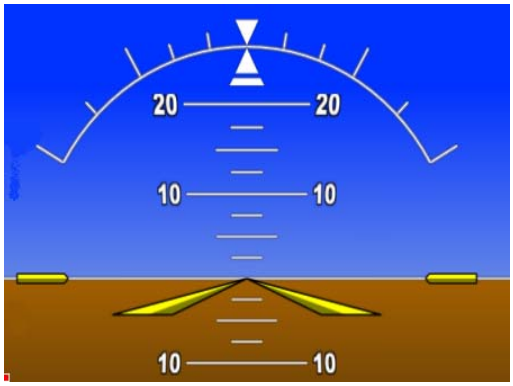
17. Verify on PFD 1 and PFD 2 that there is an “ESP OFF” and for installations with AOA mode, an “ESP DEGRADE” alert message.



18. Remove the cover from both GPS1 and GPS2 antennas.
19. Remove power to the aircraft and avionics systems by placing the aircraft AVIONICS MASTER PWR and BATT switches to OFF.
20. Wait ~ 1 minute before re-applying aircraft power.
21. Apply power to the aircraft and avionics systems by placing the aircraft AVIONICS MASTER PWR and BATT switches to ON.
22. During power up and GPS satellite acquisition, verify on PFD1 and PFD2 the ESP Roll Indices are displayed at 45° on the roll indicator on the Attitude Display.



23. Once AFCS PFT is complete and GPS has acquired satellites, verify on PFD1 and PFD2 the ESP Roll Indices are not displayed at 45° on the roll indicator on the Attitude Display.



24. On the GCU, rotate the inner FMS knob to activate the AUX – SYSTEM SETUP page.
25. On the MFD AUX – SYSTEM SETUP page press the SETUP 2 softkey.
26. Verify that on the MFD SETUP 2 page there is a window for Stability & Protection and the status is “ENABLED”.

27. Verify on PFD 1 and PFD 2 that there are no “ESP FAIL”, “ESP OFF”, or “ESP DEGRADE” alert messages.
28. On the GMC 710, couple the Flight Director to the right side by pressing the XFR button. The arrow that is illuminated indicates which side is coupled. No flight director modes should be active at this time.

NOTE

On power up the coupled side will default to the left side. Each time power is reapplied couple back to the right side and continue test steps.

29. Repeat step 1 thru 27 while coupled to right side.
30. Remove power to the aircraft and avionics systems by placing the aircraft AVIONICS MASTER PWR and BATT switches to OFF.
31. Wait ~ 1 minute before re-applying power for further testing as required.

7.26 GTS 8XX Traffic System Functional Check

Perform the following tests to verify GTS 8XX operational and surveillance functions. Use a ramp tester such as a TIC TR220 or equivalent to perform the tests.

To perform these tests, the aircraft must be on the ground and the GTS 8XX must be in Ground Test mode. On the MAP-TRAFFIC MAP page of the MFD, press the softkey sequence: **3, 4, 4, 3**
The **GND TEST** softkey will appear. Press the **GND TEST** softkey to activate Ground Test mode. This simulates the GTS 8XX to be airborne at 50,000 feet with a magnetic heading of 0 degrees. To exit the Ground Test mode, press the **GND TEST** softkey again.

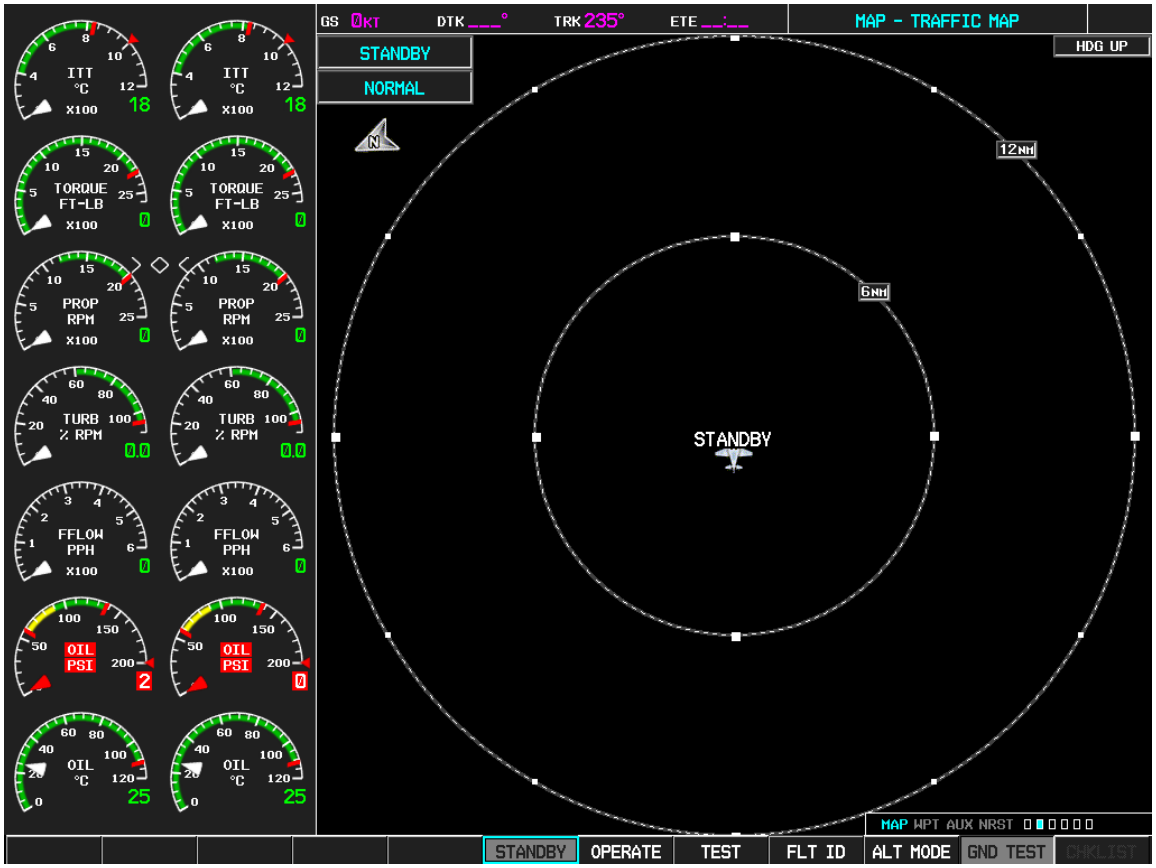


Figure 7-17, GTS 8XX GND TEST softkey

7.26.1 Antenna Verification

The following test assures the antennas and coaxial cables are properly connected. The GTS 8XX must be in Ground Test mode.

1. On the MAP-TRAFFIC MAP page of the MFD, press the **OPERATE** softkey. A self test of the antenna circuit is initialized. If the MFD displays FAILURE at the upper left corner of the traffic display area, it will be necessary to recheck the coaxial connections. If MFD displays OPERATE without indicating a fault, proceed to the next step of antenna verification.

2. Ensure that the transmitter or receiver (RX/TX) that you are testing is significantly closer to the ramp tester than another operating RX/TX, or erroneous and inaccurate results may occur. All four quadrants (0, 90, 180 and 270 degrees) will be similarly tested to verify bearing of simulated intruder supplied via the ramp tester are correctly displayed on the MAP-TRAFFIC MAP page of the MFD.

3. Set up a stationary intruder by selecting the following on the ramp tester:
    - Intruder type: ATCRBS.
    - Intruder Start Distance: 2 nm
    - Intruder Start Altitude: 50,000 ft
    - Vertical Speed: 0 fpm
    - Velocity: 0 kts (on some ramp testers, a velocity greater than 0 kts is required and a stationary intruder is created by not starting the scenario.)
4. Position ramp tester at 0 degrees.
5. Initiate the intruder scenario and verify a target is annunciated on the MAP-TRAFFIC MAP page of the MFD at the correct bearing of approximately 0 degree azimuth at 2 NM and co-altitude (read as 00 above a filled diamond indicating proximate traffic).
6. On the ramp tester, toggle intruder traffic to standby or off.
7. Reposition ramp tester and reengage the same intruder scenario for 90, 180 and 270 degrees.
8. Verify a target is annunciated on the MAP-TRAFFIC MAP page of the MFD at the same bearing as the ramp tester.
9. If the bearing is not as anticipated or multiple targets are displayed during tests, verify the following:
    - Coax cable QMA connectors are 'snapped' firmly in place at the GA58 antennas, GTS 8XX unit and GPA 65 unit
    - Coax cable TNC connectors are properly secured at the bulkhead adapter fittings
    - Connections are made to the proper channels and color-coded heat shrink is the same color on both ends of coax cables
    - QMA and TNC connectors are correctly installed on coax cables

7.26.2 Ramp Test

The following test provides a scenario that will converge and intercept the GTS 8XX to assure proper operational and surveillance functions. The GTS 8XX must be in Ground Test mode.

1. On the MAP-TRAFFIC MAP page of the MFD, press the **OPERATE** softkey.
2. Position ramp tester at 90 degrees.
3. Select the following on the ramp tester:
    - Intruder type: ATCRBS.
    - Intruder Start Distance: 10 nm
    - Intruder Start Altitude: 50,000 ft
    - Vertical Speed: 0 fpm
    - Velocity: 360 kts
4. Initiate the intruder scenario and observe the following:
    - Traffic should be acquired at approximately 10 NM at 90 degree bearing and co-altitude. Observe intruder closes on own aircraft at a rate of 0.1 NM/sec. Verify that only a single target is displayed in the expected quadrant.
    - The intruder should transition from Other Traffic (displayed as an open diamond with 00 displayed above), to proximate traffic (displayed as a filled white diamond with 00 displayed above), to a Traffic Advisory (TA) alarm (yellow filled circle with 00 displayed above.)

NOTE

The aural TA annunciations are muted if the gear is extended (and the Radio Altimeter indicates below 400 feet).

7.27 Activation of Garmin Flight Data Services

In order to activate the optional GDL 59 wi-fi datalink and optional GSR 56 satellite receiver for Garmin Flight Data Services, contact Garmin Product Support at one of the following numbers (M-F, 7:00 a.m. to 7:00 p.m. Central Standard Time, - Central USA):

- 1.866.739.5687 (toll free in USA)
- +1.913.440.1135 (worldwide)

Have the following information ready prior to calling:

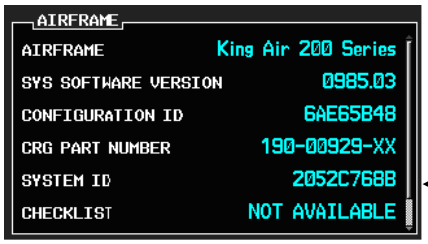
- If activating services for a GDL 59-only installation
  - Aircraft tail number, serial number, manufacturer, and model
  - G1000 system ID number

- If activating services for a GDL 59 and GSR 56 installation
  - Aircraft tail number, serial number, manufacturer, and model
  - GSR 56 unit serial number
  - G1000 system ID number
  - Name of aircraft owner and contact information
  - Credit card information

Garmin Flight Data Services will provide additional information for activation of data services.

To obtain the G1000 system ID number and GSR 56 unit serial number, accomplish the following:

1. Turn the large FMS knob on the MFD to select the AUX page group.
2. Turn the small FMS knob to select the SYSTEM STATUS page. Record the SYSTEM ID number shown in the AIRFRAME field. This number is unique for each G1000 system.



SYSTEM ID Number Location

3. Use the large FMS knob to scroll the cursor to GSR1 (if GSR 56 is installed). Record the GSR 56 serial number shown in the LRU INFO field.

For previously activated systems, if the GSR 56 satellite receiver unit is replaced, the new unit serial number must be registered with Garmin Flight Data Services. Contact Garmin Product Support and follow the activation procedure as described previously in this section.

For previously activated systems, if the GDL 59 wi-fi datalink unit is replaced, the system must be registered again. This can be accomplished by entering the same passcode received during the intial activation process as described in the following steps:

1. Connect to an available network (reference Section 7.28 for details.)
2. Using the large FMS knob, select the AUX page group on the MFD. Using the small FMS knob, select the AUX-REPORT STATUS page.
3. Press the **MENU** key on the GCU to display the PAGE MENU window.
4. With the "**Register With GFDS**" option highlighted, press the **ENT** key on the GCU to display the GARMIN FLIGHT DATA SERVICE REGISTRATION window.
5. Using the keypad on the GCU, enter the access code (provided by Garmin Product Support during the initial activation of the system) in the NEW REGISTRATION - ACCESS CODE field and press the **ENT** key on the GCU.

NOTE

The replacement GDL 59 unit must be registered again, even if the MFD already shows **REGISTERED** in the **STATUS** window.

6. With the **REGISTER** field highlighted, press the **ENT** key on the GCU.
7. Verify that the **STATUS** field indicates **REGISTERED** and that the data displayed in the CURRENT REGISTRATION field matches the aircraft information.

7.28 GDL 59 Wi-Fi Data Link Functional Check

This check verifies GDL 59 Wi-Fi Data Link interface is configured and is functional. This check requires an operating and available wireless network to be within range of the aircraft.

NOTE

This check only verifies the data output from the G1000 equipment. Any equipment/wiring added that is not part of the installation data will need separate testing and verification not covered as part of this document.

1. Start the G1000 System in Normal Mode.
2. Using the large FMS knob, select the AUX page group on the MFD. Using the small FMS knob, select the AUX-REPORT STATUS page.
3. Press the **WI-FI** softkey on the MFD to select the AUX – WI-FI SETUP page.
4. Press the **AVAIL** softkey on the MFD to display the available WI-FI networks.
5. Press the FMS knob on the GCU to activate the cursor and rotate the small FMS knob to highlight the desired network in the AVAILABLE NETWORKS field.
6. Press the **CONNECT** softkey on the MFD to connect to the network. (Skip to step 12 if the selected network is a non-secure network.)
7. If the selected network is a secure network, enter the passcode in the ENTER PASSPHRASE field in the WPA SECURITY SETTINGS pop-up window.
8. Press the **ENT** key on the GCU to accept the passcode, then press the **ENT** key on the GCU again.
9. When the SAVE SETTINGS pop-up window is displayed, press the **ENT** key on the GCU keypad to select SAVE CONNECTION.
10. Enter the appropriate airport identifier in the SELECT AN AIRPORT TO ASSOCIATE WITH THE CONNECTION field, then press the **ENT** key on the GCU to accept the identifier.
11. With the CONNECT button highlighted, press the **ENT** key on the GCU to connect to the network.
12. Press the **ENT** key on the GCU if the verification window “Are you sure you want to connect?” is displayed.
13. Verify that the CONNECTION STATUS field on the AUX – WI-FI SETUP page on the MFD indicates CONNECTED.

7.29 GSR 56 Satellite Receiver Functional Check

1. Power up the PFD1 in configuration mode.
2. On the PFD1, select GDL page group using the large FMS knob.
3. Using the small FMS knob select the GSR56 Configuration page. Verify the page can be displayed and information is available.

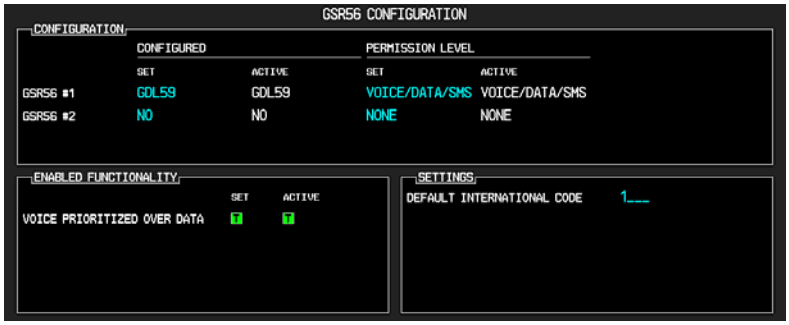


Figure 7-18, GSR56 Configuration Page

4. Restart the G1000 System in Normal Mode.
5. Using the large FMS knob, select the AUX page group on the MFD. Using the small FMS knob, select the AUX-TELEPHONE page.
6. Ensure the system is showing Iridium signal strength (best if aircraft is outside).
7. Press **TEL** button on the pilot's GMA.
8. Press the **DIAL** softkey on the MFD.
9. Enter the test phone number in the ENTER PHONE NUMBER field using the GCU keypad.
10. Press the **ENT** key on the GCU keypad to accept the phone number.
11. Press the **ENT** key on the GCU keypad to initiate the dialing sequence.
12. When call is complete, press the **HANGUP** softkey on the AUX – TELEPHONE page on the MFD to end the call.

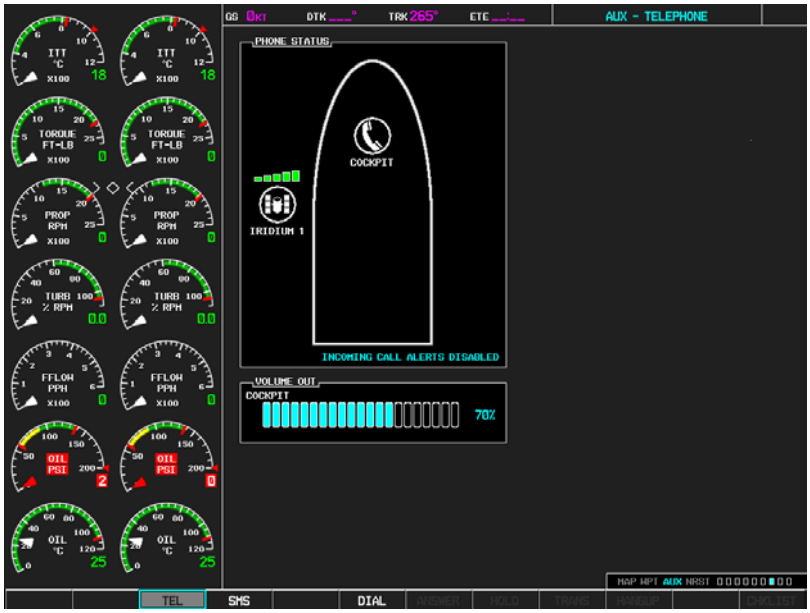


Figure 7-19, AUX-TELEPHONE page

8 System Return to Service Procedure

After reinstalling any G1000 LRU, verify the correct LRU software part numbers and versions against the numbers listed on the General Arrangement drawing listed in Table 1-2.

To check an LRU software part number and/or version, follow the procedure defined in Section 3.9.3.

8.1 Backup Path System Testing

This final checkout tests various secondary communications paths to ensure that the paths function correctly. Perform the following steps and verify the results of each test.

Before starting, create a simple Direct-To flight plan to an airport or other waypoint that is greater than 31 NM from the present aircraft position. Verify that the phase of flight displayed on the GPS CDI is ENR.

8.1.1 GPS Failure Test

Step	Desired Result
Single GPS Failure Condition: 1. Ensure GPS satellites are acquired. 2. Place a shroud over the GPS antenna for GIA 1 to prevent signal reception. Verify loss of signal on MFD AUX page 4. 3. Check for desired results. 4. Remove shroud from the GIA 1 GPS antenna and allow system to re-acquire satellites. 5. Place a shroud over the GPS antenna for GIA 2 to prevent signal reception. Verify loss of signal on MFD AUX page 4. 6. Check for desired results. 7. Remove shroud from the GIA 2 GPS antenna.	For each of the single GPS failure conditions, the following shall remain valid on the PFD throughout the procedure: • Attitude and Heading from AHRS. • Airspeed, Altitude, Vertical Speed, and OAT from Air Data Computer. • GPS Course Deviation Indicator For a GIA1 GPS Failure, an amber BOTH ON GPS2 is displayed on PFD 1 and PFD 2. For a GIA2 GPS Failure, an amber BOTH ON GPS1 is displayed on PFD 1 and PFD 2.
Dual GPS Failure Condition: 1. Ensure GPS satellites are acquired. 2. Cover both GPS antennas. Verify loss of signal on MFD AUX page 4. 3. Check for desired results. 4. Remove shrouds from GPS antennas. 5. Allow both receivers to re-acquire satellite signals before continuing.	For a dual GPS failure condition, the following shall occur: • GPS CDI flags LOI on both PFDs. • Attitude and Heading remain valid from both AHRS on both PFDs. • Airspeed, Altitude, Vertical Speed and OAT remain valid from both Air Data Computers on both PFDs. • LOI appears on MFD Map. • TAWS N/A aural alert & annunciation given. When GPS satellites are re-acquired, verify that the INTEG OK annunciation is given on the HSI in white for a brief period of time then disappears. After ~10 seconds of stable GPS position reacquisition, verify the TAWS AVAILABLE aural alert is given. Verify that the system returns to normal navigation mode (GPS CDI restored, LOI annunciation removed, & GPS data magenta).

8.1.2 GIA Failure Test

Step	Desired Result
GIA 1 Failure Condition: 1. Ensure GPS satellites are acquired. 2. Open GIA1 primary and secondary CBs. 3. Verify desired results. 4. Close GIA1 primary and secondary CBs. Allow system to re-acquire satellites and return to normal display modes.	For a GIA 1 failure condition, the following shall occur: • NAV 1 and COMM1 tuning fields on PFD1 and PFD2 are invalid (red X). • L/R engine data remains valid • XPDR1 is Inoperative. • GMA1 Is Inoperative. • AHRS1 is using backup GPS source. • AHRS2 not receiving backup GPS Information. • An amber BOTH ON GPS2 is displayed on PFD1 and PFD2. • AHRS and ADC data remain valid on PFD1 and PFD2.
GIA 2 Failure Condition: 1. Open GIA 2 CB. 2. Verify desired results. 3. Close GIA 2 CB. Allow system to re-acquire satellites and return to normal display modes.	For a GIA 2 failure condition, the following shall occur: • NAV2 and COMM2 tuning fields on PFD1 and PFD2 are invalid (red X). • L/R engine data remains valid. • XPDR2 is Inoperative. • GMA2 Is Inoperative. • AHRS2 is using backup GPS source. • AHRS1 not receiving backup GPS Information. • An amber BOTH ON GPS1 is displayed on PFD1 and PFD2. • AHRS and ADC data remain valid on PFD1 and PFD2.
Dual GIA Failure Condition: 1. Open GIA1 primary and secondary CBs and GIA 2 CB. 2. Check for desired results. 3. Restore power to both GIA units.	For a dual GIA failure, the following shall occur: • COM1/NAV1 & COM2/NAV2 fields flag invalid. • GPS CDI flags LOI on PFD • NAV1 & NAV2 CDI loses deviation bar. • XPDR field flags invalid on PFD. • Engine Instrument field flags invalid on MFD. • All AHRS & ADC fields remain valid. • Red AFCS status annunciation given. • TAWS FAIL annunciation given. • ADF/DME windows flag invalid.*

*If equipped.

8.1.3 Display Failure Test

Step	Desired Result
MFD Failure Condition: 1. Open MFD CB. 2. Verify desired results. 3. Close MFD CB.	For an MFD failure condition, the following shall occur: • MFD goes blank. • All PFD1 and PFD2 primary flight information is retained. • The COM 1/2 and NAV 1/2 tuning fields remain valid and can be tuned by rotating the tuning knobs on PFD1 and PFD2. • XPDR 1/2 fields remain valid and XPDRs can adjusted via PFD softkeys.
PFD2 Display Failure Condition: 1. Open PFD 2 CB. 2. Verify desired results. 3. Close PFD 2 CB.	For a PFD2 failure condition, the following shall occur: • PFD2 goes blank. • PFD1 and MFD remain in normal display formats. The following illuminate on PFD1: • HDG NO COMP illuminates on PFD1 • ROLL NO COMP illuminates on PFD1 • PIT NO COMP illuminates on PFD1 • IAS NO COMP illuminates on PFD1 • ALT NO COMP illuminates on PFD1 • GMA2 Fail – GMA2 is inoperative. • XPDR2 Fail – XPDR2 is Inoperative.
PFD1 Display Failure Condition: 1. Open PFD 1 PRI and PFD1 SEC circuit breakers. 2. Verify desired results. 3. Close PFD 1 PRI and PFD1 SEC circuit breakers.	For a PFD1 failure condition, the following shall occur: • PFD1 goes blank. • PFD2 and MFD remain in normal display formats. The following illuminate on PFD2: • HDG NO COMP illuminates on PFD2 • ROLL NO COMP illuminates on PFD2 • PIT NO COMP illuminates on PFD2 • IAS NO COMP illuminates on PFD2 • ALT NO COMP illuminates on PFD2 • GMA1 Fail – GMA1 is inoperative. • XPDR1 Fail – XPDR1 is Inoperative.

8.1.4 G1000 Cooling Fan Fail Annunciation Check

Do the following to verify the cooling fans and annunciations are functioning properly

Step	Desired Result
Cooling Fan Failure Conditions: 1. Ensure the G1000 is in normal mode and verify that there are no fan related alert messages displayed in the PFD1 or PFD2 Alerts Window. 2. Pull the following cooling fan circuit breakers: a) PFD/GIA FANS LEFT b) PFD/GIA FANS RIGHT c) MFD FAN	For the cooling fan failure conditions, verify that the following alert messages are displayed: • AVN FAN 1 FAIL – Avionics cooling fan #1 is inoperative • AVN FAN 2 FAIL – Avionics cooling fan #2 is inoperative • PFD 1 FAN FAIL – PFD #1 cooling fan is inoperative • PFD 2 FAN FAIL – PFD #2 cooling fan is inoperative • MFD FAN FAIL – MFD cooling fan is inoperative
Fan Failure reset and acknowledgement: 1. Reset all cooling fan circuit breakers. 2. Acknowledge alerts by pressing the ALERTS softkey on PFD1.	Verify the above alerts extinguish.

8.1.5 Standby Instrument Electrical Power Checks

This section tests the standby electrical power for the standby attitude indicator, the standby altimeter and the standby airspeed indicator. (The magnetic compass is tested in each Phase inspection during the cockpit lights check in the King Air 200 Series Maintenance Manual, listed in Table 1-2.)

Step	Desired Result
1. Remove or ensure external aircraft power is removed. Set main battery switch to OFF. 2. Ensure the STBY ATT and STBY ALTM circuit breakers are closed. 3. Ensure the MASTER PANEL LIGHTS rocker switch in the overhead panel is in the ON position. 4. Ensure the STBY INSTR knob is turned to full bright.	Verify the STANDBY BATTERY annunciator/switch is not illuminated

Step	Desired Result
5. Select (depress) the STANDBY BATTERY switch.	Verify the following: • STBY Attitude indicator motor is energized as indicated by the indicator motor and the absence of flag. • STBY altimeter vibrator is active as indicated by vibrator noise and absence of flag. • STBY attitude, STBY Altimeter, STBY Airspeed indicators are illuminated full bright. • Amber "ON" is annunciated full bright on the STANDBY BATTERY switch. • White STANDBY BATTERY legend on the standby battery switch is illuminated full bright.
6. Activate aircraft power by selecting the "on" position of the BATTERY switch.	Verify the following: • "ON" annunciation should extinguish on the STANDBY BATTERY switch. • "ARM" should be fully illuminated (green) on the STANDBY BATTERY switch. • The STBY attitude, STBY altimeter and STBY airspeed instrument lighting reverts to the aircraft settings. • The STBY attitude motor and STBY altimeter vibrator remain active. • White STANDBY BATTERY legend on the standby battery switch remains illuminated.
7. Deselect the STANDBY BATTERY switch	Verify the following: • "ARM" annunciation extinguishes on the STANDBY BATTERY switch. • STBY attitude motor and STBY altimeter vibrator remain active. • White STANDBY BATTERY legend on the standby battery switch remains illuminated.
8. Remove aircraft power by selecting the battery switch to "OFF" position.	Verify the following: • The STBY Attitude motor is deactivated (the sound of the motor may be present as the gyro spools down). • The STBY altimeter vibrator is deactivated. • The STBY attitude, STBY altimeter, STBY airspeed and magnetic compass are no longer illuminated. • White STANDBY BATTERY legend on the standby battery switch extinguishes.

8.1.6 G1000 Backup Path Test

1. Remove power from the displays by pulling the following circuit breakers:
   - PFD1 PRI
   - PFD1 SEC
   - PFD2
   - MFD
2. Reboot PFD1, PFD2 and MFD while holding the ENT key on each display (far right key on MFD) until the words INITIALIZING SYSTEM appear.
3. In configuration mode, go to the GDU Page Group on PFD1.
4. On PFD1, activate the cursor and select PFD1 in the SELECT UNIT field and press ENT.
5. Observe the GRS 77 and GDC 74 DATA indicators in the ARINC 429 window.
6. Verify both indicators are GREEN, indicating the channels are receiving data as shown below:

Figure 8-1, GDU Data Verification (ARINC 429)

7. On PFD1, activate the cursor and select PFD2 in the SELECT UNIT field and press the ENT key.
8. Repeat Steps 5 and 6.
9. On PFD1, activate the cursor and select MFD1 in the SELECT UNIT field and press the ENT key.
10. Repeat Steps 5 and 6.
11. On PFD1, go to the GIA Page Group. Go to the RS-232 / ARINC 429 CONFIG page.
12. Verify that GIA1 is selected in the SELECT UNIT field.
13. Observe the data indicators for all configured RS-232 and ARINC 429 channels (except GIA DEBUG), including the GRS 77 and GDC 74 ARINC 429 channels.
14. Verify all DATA indicators are GREEN, indicating the channels are receiving data as shown in the following image:

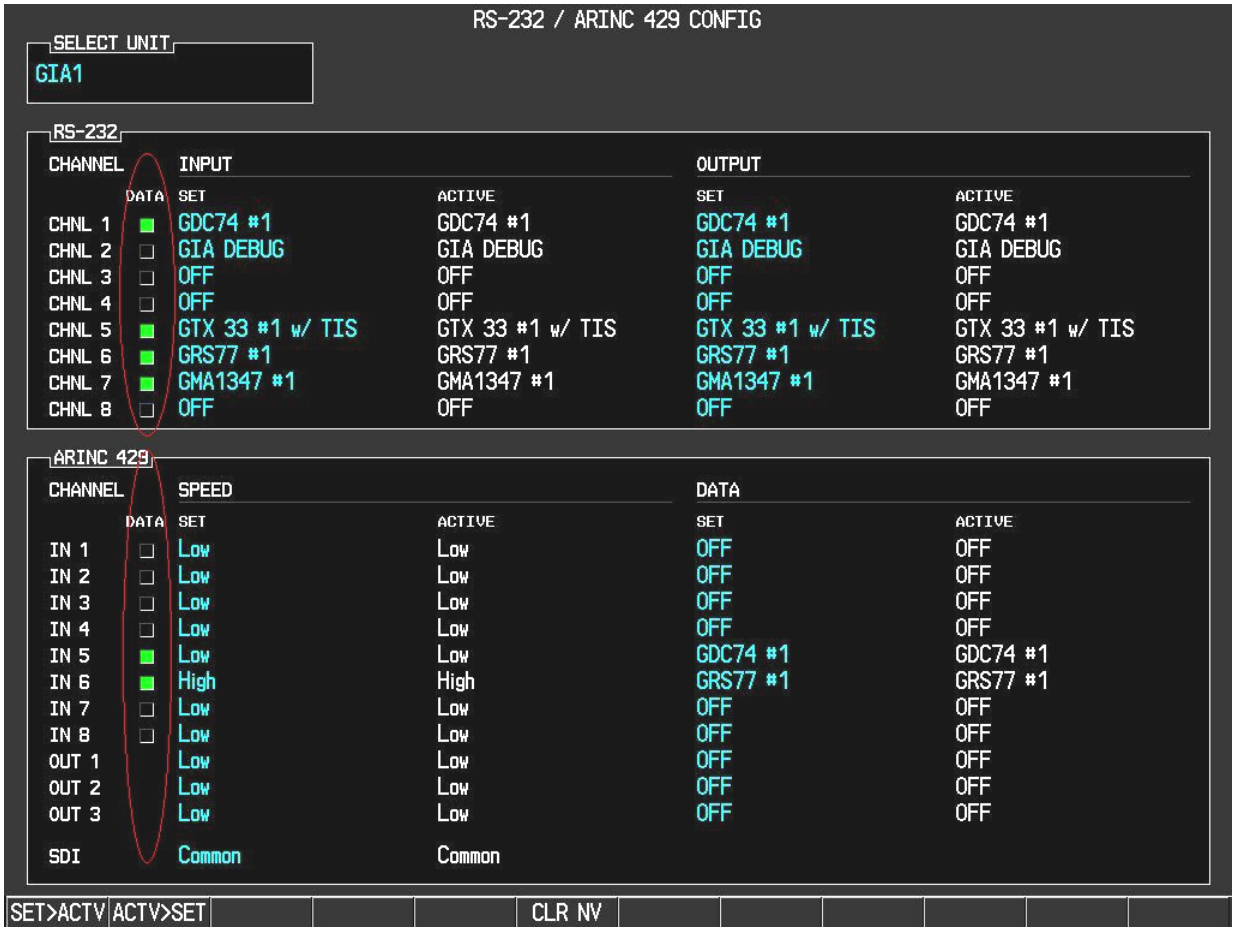

RS-232 / ARINC 429 CONFIG
SELECT UNIT
GIA1
RS-232
CHANNEL
INPUT
OUTPUT
DATA
SET
ACTIVE
SET
ACTIVE
CHNL 1 GDC74 #1 GDC74 #1 GDC74 #1 GDC74 #1
CHNL 2 GIA DEBUG GIA DEBUG GIA DEBUG GIA DEBUG
CHNL 3 OFF OFF OFF OFF
CHNL 4 OFF OFF OFF OFF
CHNL 5 GTX 33 #1 w/ TIS GTX 33 #1 w/ TIS GTX 33 #1 w/ TIS GTX 33 #1 w/ TIS
CHNL 6 GRS77 #1 GRS77 #1 GRS77 #1 GRS77 #1
CHNL 7 GMA1347 #1 GMA1347 #1 GMA1347 #1 GMA1347 #1
CHNL 8 OFF OFF OFF OFF
ARINC 429
CHANNEL
SPEED
DATA
DATA
SET
ACTIVE
SET
ACTIVE
IN 1 Low Low OFF OFF
IN 2 Low Low OFF OFF
IN 3 Low Low OFF OFF
IN 4 Low Low OFF OFF
IN 5 Low Low GDC74 #1 GDC74 #1
IN 6 High High GRS77 #1 GRS77 #1
IN 7 Low Low OFF OFF
IN 8 Low Low OFF OFF
OUT 1 Low Low OFF OFF
OUT 2 Low Low OFF OFF
OUT 3 Low Low OFF OFF
SDI Common Common
SET>ACTV
ACTV>SET
CLR NV

Figure 8-2, GIA Data Verification (ARINC429/RS-232)

15. Activate the cursor and select GIA2 in the SELECT UNIT field, and then press the ENT key.
16. Repeat Steps 13 and 14.

17. On PFD1, go to the CAN / RS-485 CONFIGURATION page in the GIA Page Group.
18. Verify that GIA1 is selected in the SELECT UNIT field.
19. Observe the data indicators for all configured RS-485 channels.
20. Verify all DATA indicators are GREEN, indicating the channels are receiving data as shown:

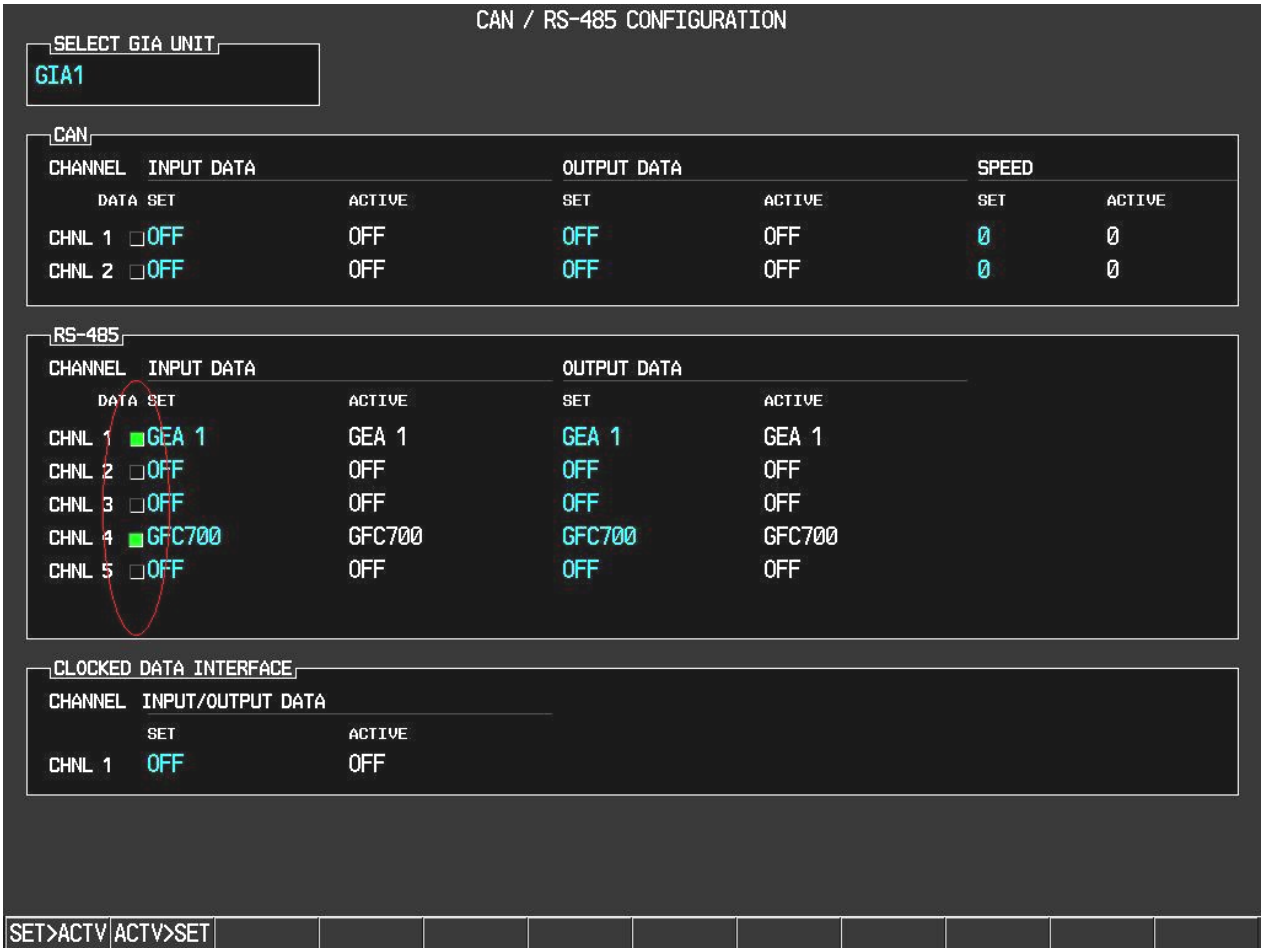


Figure 8-3, GIA Data Verification (RS-485)

21. Activate the cursor and select GIA2 in the SELECT UNIT field, and then press the ENT key.
22. Repeat Steps 18 and 19.

8.2 GFC 700 Ground Checkout

The following procedures verify the proper operation of the GFC 700 AFCS, after maintenance has been performed. The technician performing these checks should be thoroughly familiar with the G1000 and GFC 700. Information on the installation and operation of the GFC 700 can be found by referring to Sections 6.11, 6.14 and the G1000 in King Air 200/B200 Cockpit Reference Guide, listed in Table 1-2.

NOTE

In the sections that follow, an Autopilot disconnect should be accompanied by an aural alert (two-second tone) unless otherwise specified.

8.2.1 Pre-Flight Test

1. If selected ON, select the BATT and AVIONICS MASTER PWR switches and ground power unit to OFF. After 30 seconds select the ground power unit and BATT and AVIONICS MASTER PWR switches to ON. Verify the GFC 700 begins an automatic pre-flight test after AHRS and ADC parameters become valid.
2. Verify that a white 'PFT' annunciation is displayed on PFD1 and PFD2, as shown in Figure 8-4.

Figure 8-4, Pre-Flight Test

NOTE

A momentarily red AFCS annunciation displayed before PFT starts is acceptable.

3. Upon successful completion of the test, an aural alert will sound and the annunciation will clear. The aural alert is generated by either GIA 63W #1 or GIA 63W #2, alternately, with each system power-up. Thus, the PFT sequence must be run twice to verify both GIA units are providing the correct aural alert.

NOTE

If the 'PFT' annunciation turns red, the test has failed. Return to Section 5 for troubleshooting.

4. Repeat Steps 1 - 3 to test the PFT aural alert for the other GIA 63W.

Continue to Section 8.2.2.

8.2.2 AFCS Switch Checks

Verify that the AFCS system buttons and switches are operating correctly by performing the following:

1. Actuate both sections of the PITCH TRIM (NOSE UP/NOSE DN) switch to activate Manual Electric Pitch Trim (MEPT). Verify the trim clutch engages and the trim wheel drives in the requested direction. Check operation in both the up and down direction.
2. Press the AP/YD DISC TRIM INTRPT switch and hold while actuating the manual electric trim switch. Verify trim does not run and the trim wheel rotates freely when moved manually. Release the AP/YD DISC TRIM INTRPT button and PITCH TRIM switch.
3. Engage the autopilot by pressing the AP key on AFCS mode controller. Press and hold the left section of the manual electric trim switch. Verify the Autopilot disengages normally with an aural alert and the trim wheel rotates freely when moved manually.
4. Engage the autopilot again by pressing the AP key on the AFCS mode controller. Verify the pitch and roll clutches engage and resist movement of the control wheel. Press and hold the CWS switch and verify the control wheel moves freely when moved manually. Verify the green 'AP' at the top of PFD1 and PFD2 is replaced by a white 'CWS'.
5. Release the CWS switch and press the 'XFR' key on the AFCS mode controller. Verify the clutches are engaged and resist movement of the control wheel. Press and hold the CWS switch and verify the control wheel moves freely when moved manually. Verify the green 'AP' at the top of PFD1 and PFD2 is replaced by a white 'CWS'.
6. Release the CWS switch and press the AP/YD DISC TRIM INTRPT switch on the pilots control wheel. Verify the autopilot disengages with a flashing amber 'AP' annunciation on PFD1 and PFD2, accompanied by an aural alert. Verify that the control wheel is free in pitch and roll axes.
7. Engage the autopilot again by pressing the 'AP' key on the AFCS mode controller. Open AFCS SERVOS circuit breaker. Verify the autopilot disconnects and the abnormal disconnect is provided, consisting of a continuous aural alert and a flashing red/white 'AP' annunciation. Verify no AFCS annunciations (e.g. AFCS, PFT, Mistrim) remain on PFD1 or PFD2. Press the AP/YD DISC TRIM INTRPT switch to cancel the abnormal alert. Close the AFCS SERVOS circuit breaker to restore power to the system and wait for completion of the pre-flight test sequence.
8. Engage the autopilot again by pressing the 'AP' key on the AFCS mode controller. Ensure the autopilot is coupled to GIA1 by verifying the arrowhead next to the 'XFR' key on the AFCS mode controller is pointing to the pilot's side. If the arrowhead points to the copilot's side, press the 'XFR' key. Open GIA1 primary and secondary circuit breakers. Verify the autopilot disconnects with a continuous aural alert and a flashing red/white 'AP' annunciation. Press the AP/YD DISC TRIM INTRPT switch to cancel the alert and annunciation. Close the GIA1 primary and secondary circuit breakers and wait for completion of the pre-flight test sequence.
9. Press the 'XFR' key on the AFCS mode controller and engage the autopilot by pressing the 'AP' key on the AFCS Mode Controller. Press the AP/YD DISC TRIM INTRPT switch on the pilot side to disconnect the autopilot; verify the flashing amber 'AP' alert is displayed on PFD1 and PFD2.
10. Press the GO AROUND button on the left throttle. Verify 'TO' is annunciated on PFD1 and PFD2 for both PITCH and ROLL modes and the command bars should be at 8 degrees nose up and wings-level.
11. Press the Flight Director (FD) key on the AFCS mode controller to deactivate the GA mode. Press the AP key to engage the autopilot. Press the CWS button for a minimum of 5 seconds and release; verifying there is no residual force on the control stick for the pitch axis.

12. Disengage the autopilot by pressing the AP/YD DISC TRIM INTRPT switch on the co-pilot's control wheel. Engage VS mode by pressing the VS key on the AFCS mode controller. Verify PFD1 and PFD2 display 'VS' in green and indicates a pitch reference of '0 FPM'.
13. Press the FLC key on the AFCS mode controller and verify that 'FLC' is annunciated on PFD1 and PFD2 in green with a reference of 100 KTS.
14. Press the ALT key on the AFCS mode controller and verify that the 'ALT' annunciation is displayed in green on PFD1 and PFD2 with an altitude reference equal to the aircraft altitude (within the nearest 20 feet).
15. Press the FD key and verify that the mode annunciations and command bars are removed from the display.

8.2.3 Autopilot Clutch Overpower Check

NOTE

The GFC 700 uses electronic torque limiting as well as mechanical slip clutches to limit the maximum servo effort. When the system is on the ground, the electronic torque limiting is removed, allowing manual checks of the slip-clutch settings.

1. Engage the Autopilot by pressing the AP key on the AFCS mode controller.
2. Manually overpower the autopilot clutches in pitch, roll and yaw. If the Autopilot clutches cannot be overpowered, check the GSM 85A clutch torque settings or GSM 86 clutch cartridge. Refer to the servo installation drawing (listed in Table 1-2) as applicable.
3. Actuate and hold PITCH TRIM switch in either the NOSE UP or NOSE DOWN direction to disconnect the autopilot. While the trim is running, restrain the aircraft pitch trim wheel and verify that the trim clutch can be overpowered. If it cannot be overpowered, check the GSM 85A clutch torque setting or GSM 86 clutch cartridge. Refer to the pitch trim servo installation drawing listed in Table 1-2.
4. Engage the autopilot by pressing the AP key on the AFCS mode controller. Actuate and hold the manual electric trim switch in either the up or down direction to disconnect the autopilot. Verify that the trim wheel moves smoothly in both directions throughout the entire trim range during manual electric trim operation. If the trim wheel hesitates, this may indicate that the pitch trim clutch is slipping and proper clutch setting or clutch cartridge and cable tension should be verified. Refer to the King Air 200 Series Maintenance Manual and Pitch Trim Servo Install drawing, listed in Table 1-2, for clutch settings and cable tensions. If both clutch setting and cable tension are within tolerance, check the aircraft pitch trim system for excessive friction. Refer to the King Air 200 Series Maintenance Manual listed in Table 1-2.

8.2.4 Manual Electric Pitch Trim Speed Check

1. Run MANUAL ELECTRIC PITCH TRIM in one direction until it runs against the mechanical stop.
2. Run the trim in the opposite direction, and using a stop watch or equivalent device, time the trim speed to the opposite mechanical stop. Verify the elapsed time for full travel measures 13 ± 3 seconds.

8.2.5 Autopilot Operation Checks

NOTE

For aircraft with software version 0985.03 and the Electronic Stability and Protection (ESP) option, an airspeed of 200 knots must be input using a pitot-static test set.

1. Engage the Autopilot by pressing the AP key on the AFCS mode controller. Push the HDG knob to synchronize the heading bug to the current aircraft heading. Select HDG mode by pressing the HDG key on the AFCS mode controller. Verify the command bars are level and the control wheel is stationary. (There may be some roll motion in the yoke if the aircraft not perfectly level.)
2. Turn the HDG knob to the left and right and check that the command bars move in the correct direction and the control wheel follows the command bars.
3. Push and hold the CWS button and pull the control wheel to the center of the pitch control range. Release the CWS button. Verify the autopilot clutches re-engage and hold the wheel stationary.
4. Holding the control wheel lightly, rotate the NOSE UP/DN wheel on the AFCS mode controller two clicks UP to increase the pitch reference. Verify the command bars move up 1 degree and the control wheel begins moving aft. (In some aircraft, the down spring may require manual assistance to get aft control stick movement).
5. While holding the control wheel firmly, press and hold the CWS button to re-synchronize the pitch reference. Re-center the control wheel to wings level and mid-range elevator travel. Release the CWS button and check that servo clutches re-engage before releasing the control wheel.
6. Rotate the NOSE UP/DN wheel on the AFCS mode controller two clicks DOWN to decrease the pitch reference. Verify the command bars move down 1 degree and the control wheel begins moving forward. Hold the controls and press CWS to re-center the command bars and stop control wheel movement.
7. With the Autopilot still engaged and the CWS button pressed, move the control wheel to its aft limit. Release the CWS button and apply continuous forward pressure, slowly moving the control wheel. After a brief delay, verify the trim wheel begins moving in a trim up direction.
8. Grip the control wheel and press the CWS button. Verify trim motion stops. Move the control wheel to the forward limit and release the CWS button. Slowly move the control wheel aft. After a brief delay, verify the trim wheel begins to trim down. Relieve pressure on the wheel and verify the trim motion stops. Check that the trim wheel is free to turn. Hold the control wheel and press the AP/YD DISC TRIM INTRPT switch to disconnect the autopilot.

8.2.6 VOR/LOC/GS Test

Perform the following test using ramp test equipment. Operate the equipment according to the test equipment manufacturer's instructions.

NOTE

The PFD HSI does not show a course deviation bar unless a valid VHF NAV frequency is tuned.

1. Ensure FD is coupled to PFD1 as indicated by a left pointing arrow next to the XFR button.
2. Simulate a VOR signal on a radial equivalent to the aircraft heading. Tune the NAV 1 and NAV 2 receivers to the simulation frequency.
3. Set the HSI on PFD1 to VOR1 by pressing the CDI soft key until VOR1 is selected. Set the HSI on PFD2 to VOR2 by pressing the CDI soft key until VOR2 is selected. Rotate CRS1 and CRS2 knobs to set VOR1 and VOR2 course pointers to aircraft heading. (CDI Synchronization must be set to OFF on the AUX-SYSTEM SETUP 1 page on the MFD.)
4. Verify full scale deflection of VOR1 and VOR2 CDI by varying the selected course at least 10° left and right. Reset course pointers to aircraft heading.
5. Engage the autopilot and press the NAV key on the AFCS mode controller. Using the CRS1 knob alter course by 10° to the right. Verify the flight director and aircraft controls respond by flying to the VOR course. Repeat to the left.
6. Couple FD to PFD2 by pressing the XFR button on the AFCS mode controller. Verify FD is coupled right as indicated by a right pointing arrow on the AFCS mode controller next to the XFR button. Repeat step 5 using CRS2 knob while coupled to PFD2.
7. Set CRS1 and CRS2 course pointers to aircraft heading.
8. Simulate a Localizer/Glideslope signal. Tune this signal on NAV 1 and NAV 2 receiver. Set the PFD1 HSI to LOC1 and PFD2 HSI to LOC2 by pressing CDI soft key until LOC1 and LOC2 is selected. Use the test equipment to center the deviation bars (localizer and glideslope) on PFD1 and PFD2.
9. Press the APR key on the AFCS mode controller. Verify that the LOC and GS annunciations are green on PFD1 and PFD2. Apply right/left and up/down localizer/glideslope signals using the test equipment. Verify that the Flight Director and flight controls respond appropriately.
10. Couple FD to PFD1 by pressing the XFR button on the AFCS mode controller. Verify FD is coupled to PFD1 as indicated by a left pointing arrow on the AFCS mode controller next to the XFR button.
11. Repeat step 9 while coupled to PFD1.

8.3 Maintenance Records

After conducting required return-to-service procedures in accordance with the King Air 200 Series Maintenance Manual, listed in Table 1-2, the aircraft may be returned to service.

Record the following information in appropriate aircraft maintenance logs:

- Part number of the G1000 software loader card used to perform software loading or software updates.
- Record part and serial numbers of any LRU which was replaced.
- Record any database updates which were performed during maintenance.
- Any other applicable information related to the maintenance work performed on the aircraft.

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